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Observations on the Theory which ascribes Secretion to the Agency of Nerves. By W. P. Alison, M. D. F. R. S. E. &c. *Professor of Medical Jurisprudence and Medical Police in the University of Edinburgh.*

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The importance of Dr. Wilson Philip's Experimental Inquiry into the Laws of the Vital Functions must be obvious to all who study, with the attention it deserves, his refutation of the theory of Le Gallois, concerning the connexion of the nervous system, in the living body, with muscular action, contained in a work which the French National Institute characterized as "certainly the most important which has appeared in physiology since the learned experiments of Haller," and the doctrines of which that learned body, somewhat hastily, sanctioned and adopted.

The most prevalent opinion in the schools of medicine, in regard to the connexion of the nervous system with muscular action, has been, that the muscles derive from the nerves, not merely occasions of irritation, but supplies of irritability, in the shape of nervous influence or energy. And the difference between the two sets of muscles, has been referred by some to the different parts of the nervous system, from which their respective portions of energy have been conceived to be derived. Thus Willis and Boerhaave derived the energy of the voluntary muscles from the brain, and of the involuntary from the cerebellum; Whytt and Cullen, that of both from the brain generally; Bichat, that of the former from the brain, and that of the latter from the ganglia of the sympathetic nerve; Le Gallois, that of the former

set of muscles from the nerves immediately supplying them, and that of the latter from the spinal marrow; and, in some late French physiological works, reference is made to an opinion of Reil, which may perhaps be considered as the last hold of the doctrine of nervous energy, namely, that all muscles derive their irritability from the coats of the nerves immediately supplying them.

These opinions have led to much false reasoning in regard to the nature of various diseases; and therefore it is of the utmost importance to medical science, that we should be in possession of facts illustrating the true nature of the connexion between the nervous system, and the different muscular actions which constitute so important a part of all the functions of the living body. The experiments and observations of Dr. Wilson Philip on this subject, agree perfectly with those recorded by Haller, in his *Elements of Physiology*, and in his long controversy with Dr. Whytt, and appear to place beyond all doubt the general correctness of the doctrines which he taught in this fundamental department of physiology.

The following may be stated as the most important propositions which these physiologists have established.

1. "That the power of the muscles, both of voluntary and involuntary motion, is independent of the nervous system;" that is, that no muscle, voluntary or involuntary, derives any thing from the nervous system, which enables it to contract. And, therefore, that the term nervous influence or energy in this, the most common sense in which it is employed in physiological and medical writings, is absolutely without a meaning.

2. That many muscles are directly excited to contraction by causes acting on the nervous system. And,

3. That the contractile power of all muscles may be much and variously modified, and in some instances destroyed, by causes acting on the nervous system.*

* That changes in the nervous system affect muscular action in *both* these ways was distinctly pointed out by Haller, in the same paper in which he controverted the doctrine of the dependence of muscular irritability on nervous influence, although the French reporters on Le Gallois's work seem to have supposed that, according to him, changes in the nervous system can only act in one way upon muscles, *viz.* by directly stimulating them, and therefore that, in his apprehension, the nerves of the heart must have been absolutely useless. "Un jour," says he, "peutêtre, l'on reduira l'usage des nerfs, par rapport aux muscles, à leur porter, de quelque façon que la chose se fasse, l'im-

If these principles be correct, we see the necessity, in all investigations concerning the nervous system, of keeping steadily in view a principle which no train of reasoning is necessary to establish, but which has often escaped the attention of those engaged in such inquiries.

When a change is produced in any of the functions of the animal economy, by means of a change effected in the nervous system, two explanations of the fact immediately present themselves.

It may either be supposed, that the ordinary exercise of the function affected is dependant on some particular condition of the nervous system, and, of course suffers a change corresponding to that which the nervous system undergoes; or, without any such habitual dependence of the function affected on the nervous system, it may be supposed liable to change from changes in that system. The former supposition is perhaps the more obvious of the two; but there is nothing in the nature of things to prevent the latter from the being the true one, it being just as probable *a priori*, that muscular actions, or secretions, taking place independently of nerves, should be *liable to modification*, from changes produced in nerve, as that that power, so totally different from any possessed by nerves themselves, should be *dependant* on any influence which nerves can supply.

Unless, therefore, we have an *experimentum crusis*, to determine which of these explanations, in any particular case, is the true one, we are not entitled, from seeing an alteration, or even the cessation of any function of the animal economy, brought about by changes in the nervous system, to infer the dependance of that function, in ordinary circumstances, on any thing derived from the nerves.

Thus, Le Gallois was not entitled to conclude, from seeing

pression des volontés de l' ame, et á *augmenter cette tendance naturelle, que les fibres ont déjà par elles mêmes, à se contracter.*"**

And again, "minime improbabile est, etiam cordi per nervos vim motricem accedere, quæ motum, *a natura irritabili* pendentem *fortiorem et celeriorem* efficiat."†† It is impossible to express more clearly that the muscular power of the heart although dependant only on its irritable nature, or as Dr. W. Philip expresses it, perhaps less correctly on its mechanism, is liable to increase, and we may add, to diminution, from causes acting on the nervous system. I apprehend, therefore, not only that Haller has not overlooked the use of the nerves of the heart, but that he has stated their use more correctly than any physiologist since his time.

The experiments of Dr. Philip have illustrated more fully than those

** *Dissert. sur l'Irritabilité*, p. 52.

†† *Elem. Physiol.* Vol. I. p. 493. See also Vol. IV. p. 516.

the action of the heart stopped in his experiments, by sudden destruction of the spinal marrow, that the ordinary actions of the heart are dependant on, or its life derived from, the spinal marrow; because without making that supposition, we can suppose it subject to change, from changes in the condition of the spinal marrow. In that case an *experimentum crusis* in favour of the *latter* supposition was afforded, by the observation of Dr. Wilson Philip, that the *gradual* destruction of the spinal marrow, or its removal from the body is not attended with any such change on the action of the heart.

The principal stated above has been fully recognised by Dr. Wilson Philip, in reference to involuntary muscular action, but he seems to me to have overlooked it in his speculations on secretion and animal heat.

After having seen reason to think, that muscular irritability, although often influenced through the medium of nerves, is in no case dependant upon any influence derived from the nervous system, I think we may go a step farther in laying down the fundamental principles of this kind of inquiry.

Whatever other purposes the nervous system may be destined to serve in the animal economy, it seems obvious, that it is intended to serve as a medium of communication between mind and body, and that all the changes in the bodily functions which are observed to follow mental acts, are produced through its intervention.

It is generally agreed among physiologists, and I think it cannot be doubted, that some *physical change* is produced in the ner-

of any other physiologist these *two different modes*, in which changes in the nervous system affect muscular action. The general results of his observations, and of those of Haller, Bichat, and others on this subject, may be stated to be, that the *first* mode of action, that is, the direct excitation of muscular fibres to contraction by impressions made on the nervous system, is confined to the *voluntary* muscles; and that the *second* mode of action, that is, the alteration of the vital power, or tendency to contraction of muscular fibres by impressions made on the nervous system, is chiefly exerted on the *involuntary* muscles.

Dr. W. Philip had indeed recorded in the second chapter of the second part of his work, some very important experiments which he considers as proving that the heart may be directly stimulated by impressions made on the nervous system. But although the term stimulus was very naturally applied by him to the substances which quickened the action of the heart when applied to the brain or spinal marrow, yet various considerations might be stated to shew, that the effect of those substances is more correctly expressed by saying, not that they excited contractions of the muscular fibres of the heart, but that they increased the tendency of the muscular fibres of the heart, to contract from the stimulus of the blood.

vous system by every mental act which, through its intervention, influences any bodily function. If this be so, it may naturally be expected, that these changes in the nervous system may be readily *imitated* by the application of physical agents, which furnishes a ready explanation of the effect of such agents, applied to the nervous system, on the various functions. And, therefore, when any effect is observed in any function from the application of physical agents to the nervous system, analogous to the changes produced in the same function by mental acts or affections, instead of arguing from that fact, the necessary dependance of the function in question, on any influence derived from the nervous system, it seems more reasonable merely to suspect that those physical agents must have wrought a change on the nervous system, somewhat analogous to that, which these mental acts or affections had been wont to produce.

The opinion, that secretion is dependant on nervous influence or energy has been maintained by different authors; but the best arguments in favour of it are those which have been lately stated by Sir Everard Home,* Dr. Wollaston,† Mr. Brodie,‡ and Dr. Wilson Philip.§

Of these the most important is derived from the observations of the two last authors, on the effect of dividing the eighth pair of nerves, on the secretions of the stomach. Dr. Philip found, that no change takes place on food that has been recently taken into the stomach of rabbits, on which this operation is performed, even when they live twenty-six hours after the operation, implying that the gastric juice had not been secreted. This is confirmed by the observation of older experimenters, that in animals killed by the division of the eighth pair of nerves, the contents of the stomach are found putrid: the effect, I presume, of their remaining some time at the temperature of the internal parts of the body, without being acted on by a chemical solvent. (See *Haller, Experiences sur les parties sensibles et irritables*, No. 182 and 185.) And Mr. Brodie found that the ordinary effect of arsenic, to produce an increase of the mucous and watery secretions of the stomach and intestines, is prevented from taking place, by dividing, either those nerves in the neck, or the branches of them which supply the stomach on the lower part of œsophagus.‖ From these experiments, these authors conclude, that the

* *Philosophical Transactions* for 1809.
† *Philosophical Magazine* for 1809.
‡ *Philosophical Transactions* for 1814, p. 102.
§ *Expl. Inquiry* &c. p. 119, et seq.
He had previously found the secretion of urine to cease after the

secretions of the stomach and other parts, are dependant on an influence derived from their nerves.

According to the principle above laid down, the facts just mentioned, although obviously susceptible of explanation in this manner, are not sufficient to justify this conclusion. Without supposing the secretions of the stomach to *depend* upon any thing derived from the nervous system, we may suppose them *liable to change*, or even to total annihilation, from *certain lesions* of that system. And although the kind of lesion which produces this effect on these secreting organs be different from that which stops the movements of the heart; yet as we are ignorant of the manner in which any lesion of the nervous system affects muscular action or secretion, we are not more entitled to conclude, that the secretions of the stomach depend on its nerves, from finding them stopped by the division of these nerves, than Le Gallois was, to conclude that the action of the heart depends on the spinal marrow, from finding it stopped, in his experiments, by crushing that organ.

If the conclusion in question does not necessarily follow from the experiments, we are justified in refusing our assent to it, without pointing out any other manner in which the results of these experiments may be explained. Different theories may perhaps be formed for this purpose, but there is one consideration that appears to me particularly deserving of notice. The eighth pair of nerves are generally regarded as those which are most concerned in the *sensations* of the stomach. Now it is pretty certain that different secretions are very dependant on certain sensations. No one can doubt of the effect of the sensation of grateful food in the mouth, upon the action of the salivary glands. I think it cannot be doubted, that dividing the nerves of the tongue and palates, and so paralysing the organ of taste, would greatly diminish the flow of saliva during the mastication of food; but we know that the salivary glands cannot derive any energy from these nerves, because they are supplied by other nerves. By dividing the eighth pair of nerves after an animal has taken food; the natural sensations which accompany and succeed the reception of food into the stomach are prevented from taking place and the painful sensations of dyspnœa and nausea are produced, and may not this be sufficient to explain the failure of secretion in the stomach? The same supposition, of diminution, or destruction of sensation, and of the substitution of sensations

spinal cord is divided in the neck, or the head removed, both in rabbits and dogs; notwithstanding that the circulation is kept up by artificial respiration. See *Philosophical Transactions* for 1811.

of a different kind, may explain the want of any increased secretion from the action of the arsenic in Mr. Brodie's experiments.

When, therefore, Mr. Brodie concludes, from these experiments, that "the suppression of the secretions was to be attributed to the division of the nerves," and "that the secretions of the stomach and intestines are very much under the control of the nervous system," his inferences must command general assent. But when he hazards the farther conclusion, that "the secretion was prevented in consequence of the nervous influence having been interrupted," I would beg to ask, what is the precise meaning attached in this instance to the term nervous influence, and what proof there is of its having been interrupted?

If it be meant merely, that the nerves are prevented from performing their accustomed actions, in regard to secretion, we may object to the expression, because it seems to imply, that these actions are constant and essential to the effect, whereas it is very possible that they may be only occasional, and may modify, without assisting, the secreting actions.

If it be meant that some influence derived from the nervous system really essential to secretion is cut off by the operation, we may object to the conclusion, because the fact may be equally well explained by supposing the lesion of the nerves to communicate a noxious influence to the secreting organ, without intercepting a salutary one.

The other arguments in favour of the dependance of secretion on the nervous system, chiefly insisted on by the authors formerly mentioned, are these:

1. Changes in the blood, somewhat similar to those produced by secretion, particularly the coagulation of the albuminous and the separation of the saline part, may be produced by galvanism.

2. Galvanism is excited by the contact of the nerve and muscle of an animal recently dead, and a galvanic pile may be formed of alternate layers of nervous and muscular substance.

3. The action of nerves on muscles is similar to that which is exercised by galvanism on muscles.

From these facts it is concluded, that what has been called nervous influence or energy is in all cases galvanism, and from them, taken in connexion with the facts just noticed, of the cessation of secretion on the division of the nerves supplying certain secreting organs, a strong presumption is thought to arise, that secretion is owing to a galvanic action propagated along the nerves, and is to be numbered with the other well-known chemical effects of galvanism.

In regard to secretion, a still stronger argument in favour of this theory is adduced by Dr. Wilson Philip. He found, that

when the secretion in the stomachs, either of rabbits or dogs, is suspended by cutting the eighth pair of nerves, it may be restored by applying galvanism, and the ordinary changes may be effected by the help of this agent, on the food previously taken into the stomach.

It is obvious, however, (*taken for granted that all sources of fallacy in these experiments were avoided,*) that even this fact admits very readily of a different explanation. It may be said that the secretion in the stomach does not depend on its nerves, but is liable to be influenced through them; that the shock of the division of the nerves acted as a powerful sedative, and suspended the secretion, but that the stimulus of the galvanism was sufficient to restore it.

It is obvious also, that if this last explanation be admitted, these experiments of Dr. Philip must be regarded as furnishing a decisive argument *against* the dependance of secretion upon the nervous system. For here we have the nervous influence cut off, and yet secretion going on. On the supposition that the nervous influence is really essential to secretion, this can only be explained by supposing the galvanic influence, which is substituted for it, to be really the same thing.

If therefore, we can make it probable, that the changes which occur in the nervous system are not galvanic actions, we need go no farther, after these experiments, in order to shew that the nervous system is not necessary to secretion.

But, on the other hand, even if we admit the galvanic nature of nervous actions,* it does not follow from these experiments that they are essential to secretion; for the effect of the galvanism, applied in these experiments of Dr. Philip, may be merely to counteract a noxious influence resulting from the division of the nerves, not to restore a salutary one.

I shall first state the considerations which seem to me to render it probable that the actions of nerves are not galvanic, and afterwards those which seem to me to shew, that even if nervous actions be galvanic, still they cannot be necessary to secretion.

I. It is not, of course, intended to deny, that a certain degree of galvanic action may be excited by the contact of nerve and muscle, or of nerve and gland; that these substances stand related to each other as the zinc and copper of a galvanic trough do. What is doubted is, not the presence of the cause assigned, but

* In this paper I use the term "nervous actions" as a short expression for those unknown changes in the nervous system, which are presumed to take place on various occasions in the living body, without presuming to offer an opinion as to the nature of these changes.

its adequacy both in degree of intensity, and in kind of agency, to the explanation of the phenomena, and that for the following reasons:

1. If the changes in the nerves, which precede the contraction of muscles irritated through their nerves, be of the nature of galvanism, and if it be by galvanising the muscles that all the stimuli applied to nerves excite these motions, we must suppose galvanism to be excited, from time to time, to an intense degree, in nerves and muscles, without the aid of any chemical agent, and without any change in the chemical constitutions of these parts taking place either during or after the evolution of the galvanism. Now it is quite clear, that in tracing the physical changes produced by mind on body upwards to their source, we must ultimately arrive at some physical change which is inexplicable; and this ultimate inexplicable change may just as well be of the nature of galvanism as of any other nature. I do not therefore urge it as an argument against nervous actions being galvanic, that we cannot understand how the *mind* should excite under these circumstances strong galvanic actions in the nerves. But the important fact is, that nervous actions may be very readily excited by various *physical* agents, which certainly have no effect whatever in exciting galvanism in any other apparatus. Farther, these actions may be excited in the nerves, long after their communication with the brain, (which is supposed on this theory to be the main source of galvanic energy,) is cut off; muscles being excited to contraction by stimuli applied to their nerves fifteen days at least, according to the observation of Haller after the division of these nerves above the point irritated.

If, indeed, it were ascertained as matter of fact, that the irritation of muscles through their nerves is always attended with a notable evolution of galvanism, though it might be very difficult to explain the fact, it would be fair to argue, that the galvanism, known to be evolved, was the cause of the contraction; but in the present state of our knowledge on the subject; there being no proof whatever, that more galvanism passes from nerve to muscle during the contraction produced by irritation than at any another time, it seems to me fully as probable that muscles should be so constituted as to contract in consequence of imperceptible changes, not galvanic, communicated to them by their nerves, as that galvanism should be excited to a most intense degree in nerves, merely by bruising them with a probe, or pricking them with a pin, particularly after their communication with the source whence they are supposed to draw their galvanism is cut off.

2. The effects which are produced upon muscles by changes in the nervous system, are much more various than those which have ever been observed to result from galvanism. Stimuli applied to the nerves supplying the voluntary muscles, excite them very readily to contraction, but I believe no physiologist has ever succeeded in exciting the involuntary muscles to contraction, by applying stimuli to their nerves. Galvanism applied to either set of muscles directly excites them with nearly equal facility. Alcohol applied to the brain augments the irritability of the heart; an infusion of tobacco applied to the brain diminishes it. We may admit that galvanism is a power capable of producing both these kinds of effect on muscular organs, according as it is applied in a greater or less degree of intensity; but have we any reason to suppose, either that these two substances, acting on nervous matter, can excite galvanism at all, or that they can excite it in so very various degrees of intensity?

These considerations seem sufficient to shew, that we cannot suppose the action of nerves on muscles to be of the nature of galvanism, without supposing a much greater variety in the modes of exciting galvanism, and in its effects on muscular organs, than any observations on this power entitle us to assume.

3. If we suppose, with the authors of the galvanic theory of nervous actions, that these actions are essentially concerned in secretion, a strong argument against their identity with galvanism arises from the fact, that the various secreted fluids are so different from each other. This difficulty increases greatly, when we take into account the nutrition of all the different textures in the body, a process which Haller has well characterized as "omnium amplissima secretio." If there be powers in the animal economy distinct from galvanism, which are sufficient for the formation of the *solids* of the animal body, out of the blood, it is quite obvious that these powers must be amply sufficient for the formation of the secreted *fluids* out of the blood, and it is therefore quite unnecessary to suppose galvanism concerned in this last process. But if we regard both secretion and nutrition as dependant on galvanism, transmitted through the nerves, and refer to this cause the formation of all animal substances, from bone to serum, out of the blood, then, I think, we must make one of two suppositions. Either we must suppose the galvanism transmitted by the nerves to the various parts of the body, to be different in its nature in different places; or we must suppose the blood to undergo very various preparation in the different parts of the body, before it is submitted to the action of the galvanism.

In the former case, our explanation is contradicted by all that we know of galvanism, there being nothing to make us suppose that the blood can be differently affected by galvanism passing through two different sets of nerves; and certainly nothing that we know in the structure or composition of the different nerves, induces us to suppose that the nature of the galvanism sent through them can be different.

In the latter case our explanation only begins where the real difficulty ends. If there be power in the animal system sufficient to prepare the blood so variously, that one chemical agent thereafter operating on it, shall form out of it bone, muscle, tendon, oil, and serum, those powers must surely be adequate to the formation of these different substances without farther help; or at least it is to those powers, and not to the agent subsequently applied, that by much the greater share of the phenomena of nutrition and secretion must be ascribed.

It may be said, that although we have no proof of galvanism being excited in nerves by the application of stimuli, to such a degree as can explain the irritation of muscles through nerves; and have no proof of galvanism being so different in different situations, as to be capable of producing effects so different from each other as the formation of bone and of serum out of the same blood,—still all this may be true of galvanism; and we know so little of that power, that we are not entitled to lay down the limits, either of its developement or its action. To this I would answer, that it will be time enough to regard galvanism as identical with nervous actions, when it shall be proved, that it may be excited by as various means, and may produce as various effects.

To explain a set of phenomena in nature, is to establish their coincidence with another set of phenomena more general and better known. How then can we be said to explain the phenomena of the nervous system by resolving them into the phenomena of galvanism, when it is only by a hypothetical extension of these last phenomena, that they can be made to include the former, and when it is only in consequence of our ignorance of their real nature and limits, that we can venture upon this hypothetical extension?

4. Another circumstance which seems to me very adverse to the supposition, that division of the eigth pair of nerves, and division of any nerve supplying a voluntary muscle, act on the secretions of the stomach and the motions of the muscle, equally by cutting off a supply of galvanism, is this, that no secretion at all takes place after the former operation, whereas powerful muscular contractions may be excited by applying stimuli to the

nerve below the point of division long after the latter. According to the galvanic theory, these contractions are excited by galvanism remaining in the nerve after its division.* Why, then, does not galvanism enough remain in the nerves of the stomach after the division of the eighth pair, to carry on digestion for a certain length of time?

These considerations seem to render it extremely doubtful whether the changes which take place in the nervous system and affect the muscular or secreting organs, or the nervous actions, can be of the nature of galvanism; and if they be not galvanic, Dr. Wilson Philip's experiment above referred to, becomes an *Experimentum Crusis* against their being essential to secretion.

But, even if the actions of nerves be galvanic, there are very strong reasons for thinking that they cannot be essential to secretion and nutrition.

1. The secretion of the stomach was found to be suppressed, in Dr. W. Philip's experiments, by other lesions of the nervous system besides cutting the eighth pair of nerves. It was suppressed in rabbits nearly or entirely by destroying the lower half, or even less than the lower half, of the spinal marrow. (See Expts. 58, 59, 60, p. 171.) In these cases the stomach must still have had the supply of galvanism which it receives through the eighth pair of nerves, and in fact all that it receives from the brain and upper half of the spinal marrow, a much greater supply than that, the interception of which in the former experiments was supposed to stop the secretion. Where we find so great an effect produced on the secretion of the stomach by a cause which, even on the supposition of its deriving galvanism, through its nerves, from the brain and spinal marrow, can only have intercepted a small portion of that galvanism, it is surely reasonable to suspect, that the effect is to be explained on other principles than the interception of galvanism or of any other influence essential to secretion derived from the nerves.

It is likewise particularly worthy of notice, that the secretion of urine, although it was found to be destroyed, in Mr. Brodie's experiments, by division of the spinal marrow at its upper part, was not affected in these experiments of Dr. Philip, by the destruction of the lower half of that organ. I believe it will be allowed, that the kidneys have at least as much communication with the spinal marrow by their nerves as the stomach has: and therefore, when we find the secretion of the stomach suppressed by an injury of that organ, which does not affect the se-

* See Haller, *Mem. sur les Parties Sensibles et Irritables*, Exp. 201, 202, 214, 220,—225, and p. 237.

cretion at the kidneys, it seems fair to presume, that it is not by intercepting an influence *essential to secretion* that the injury produces the former effect.

2 This suspicion must become much stronger when these cases of suppression of the secretion of the stomach, from the destruction of part of the spinal marrow, are contrasted with the cases, of which there are many on record, of destruction of large portions of the brain, which is supposed in this theory to be the main source of nervous influence, without any affection of the functions of secretion and nutrition. For an enumeration of cases of this kind I refer to the review of Sir Everard Home's late paper on the functions of the brain in Vol. XXIV. of the *Edinburgh Review*. When we find the secretions of the stomach nearly destroyed by sudden destruction of a part of the spinal marrow, and not at all affected by gradual destruction of nearly the whole brain, we surely cannot consider the former cause to operate merely by cutting off a supply of nervous influence coming from the brain and spinal marrow, but must regard it as more probably on the same footing, with regard to secretion, as the destruction of the spinal marrow in Le Gallois's experiments, with regard to circulation, on which Dr. Philip himself has so judiciously commented; that is, as exemplifying, not a continual and essential agency of changes in the nervous system upon the function of secretion, but an occasional and controlling agency.

3. But what appears to me to remove all doubt upon this subject is the class of facts (very candidly acknowledged, but I think not duly weighed, by Dr Philip,—*Experimental Inquiry, &c.* p. 240,) in regard to secretion and nutrition taking place where nervous influence cannot be supposed to operate; in vegetables, in the animals in which no nervous system has been discovered, in the chick *in ovo* before any vestige of the brain and spinal marrow can be traced, in the early part of the existence of the human fœtus when the brain and nerves appear incapable of performing their functions,—but most of all, in the cases, which are reported on unquestionable authority, of fœtuses born alive without either brain or spinal marrow.

Dr. Philip gets over this difficulty by supposing that there may be some other apparatus, in all these cases, by which galvanism may be applied to the blood, and which may therefore supply the place of the nervous system. But this is obviously supporting one hypothesis by means of another and a much bolder one. That galvanism is at all concerned in secretion or nutrition is a hypothesis which rests fundamentally upon two suppositions, that galvanism is identical with nervous influence, and that nervous in-

fluence is essential to secretion. If we put nervous influence out of the question, we have no better evidence of galvanism being at all concerned in secretion than merely this, that it produces chemical effects on the blood, and in particular coagulates its albumen, effects which are equally produced by caloric and various other chemical agents, and which never can be considered as amounting to a proof of secretion depending upon galvanism. When, therefore, we adduce even a single instance of secretion taking place independently of any influence that can be derived from the nervous system, we cut away at once the very foundation of the hypothesis which attributes secretion to galvanism; and although the hypothetical explanation of such instances, by galvanism supposed to be drawn from another source, given by Dr. Philip, may possibly, in the progress of knowledge, turn out to be correct, yet I think we may say with confidence, that in the present state of our knowledge it is not philosophical. The proper conclusion from the examples of secretion and nutrition going on independently of nervous influence should have been, not to suggest an additional hypothesis that another influence equivalent to that of nerves may be applied, but to invalidate the hypothesis formerly entertained, that nervous influence is essential to secretion.

Abstracting from the rare occurrence of the fœtus without either brain or spinal marrow, the *fœtus acephalus*, of which many examples are recorded, appears a sufficient answer to the conclusion drawn from the experiments both of Dr. Philip and Mr. Brodie. In the child of whom we have an account by Mr. Lawrence in his paper in the *Medico-Chirurgical Transactions*, Vol. V. p. 165, there was neither brain nor cerebellum. This child lived four days, and the secretions from its stomach, bowels, and kidneys, seem to have been quite natural. Surely this is sufficient to shew that the division of the eighth pair of nerves, and of the spinal marrow in the neck, which stopped the secretions of gastric juice, and of urine in those experiments, could not have acted by cutting off an influence, essential to secretion, coming from the brain.

4. If any farther proof be required, that the conclusion drawn from the experiments of Mr. Brodie and Dr. Philip of an influence derived from the nervous system being essential to secretion, is not warranted by the facts already known on the subject,—I think it is afforded, as has been already stated by Mr. Lawrence in the paper above referred to, p. 223, by the experiments of these authors themselves. In animals in which the eighth pair of nerves is divided, the bronchiæ and air-cells of the lungs are always found, as Dr. Philip expresses it, "clogged with a frothy mucus,"

which prevents the lungs from collapsing when the thorax is opened after death, and which, by preventing the application of air to the blood in the lungs, appears, from the observations of Dr. Philip, Le Gallois, and others, to be the immediate cause of the death that succeeds that operation.

Now this frothy mucus, found not only in the air-cells, but in the bronchia, in a quantity so much greater than natural, as to be the cause of death,—what is it but a secretion? If it be denied that the fluid which is effused on the membrane lining the bronchia and air-cells be a secretion, it is not worth while to dispute about the word; but it appears to me obvious, that it is a formation from the blood, so much akin to the formation of the stomachic juice that the two must depend upon the same principles. And when we find, in the experiments in question, that the division of the eighth pair of nerves, which supply equally the lungs and the stomach, diminishes or destroys the production of the one of these fluids, and increases that of the other, it is surely prèposterous to conclude, that these experiments demonstrate the necessity of an influence, derived from the nerves to secretion in general.

There is a series of experiments by Mr. Brodie, (*Philosophical Transactions* for 1812, p. 378,) intended to prove, that in an animal which has been either killed by decapitation, or stupified by poison, in such a manner as apparently to suspend all the functions of the nervous system, the evolution of carbon still goes on at the lungs, to an equal extent as in a healthy animal, when artificial respiration is employed. To this evolution of carbon, Mr. Ellis has given the name of secretion; and although I do not pretend to decide whether that name is applied with perfect propriety in this instance, I take leave to observe, that this process, thus proved to go on notwithstanding the division, or destruction of the functions of the nerves supplying the organ concerned in it, is considered by that distinguished physiologist so nearly akin to secretion as to deserve the same name. Its continuance, therefore, even independently of the increase of the formation of mucus, in these circumstances, must be regarded as a very strong argument against the dependance of secretion on nervous influence.

Having thus considered the different arguments in favour of the supposition of that dependance, I think we may fairly say not only that there is no proof of it in the writings of physiologists, but that there is strong evidence against it. I need hardly add, that if we suppose the nervous system to be destined to exercise over secretion as well as over muscular motion, *not an uniform and*

essential but an *occasional and controlling influence*, and that particularly when itself is affected by mental acts or emotions, we shall be at no loss in explaining the phenomena which have been thought to denote the dependance of secretion on the nervous system. The secretions of the stomach in particular, are so notoriously under the control of various affections of the mind, (acting on them, in all probability, through the medium of its nerves,) that it cannot appear surprising, that they should be very much deranged by division of these nerves.

Dr. W. Philip's opinion, in regard to the connexion of the nervous system in the living body with muscular action, which appears to me to be perfectly correct, may be thus stated; That when the nervous system, is itself impressed by various agents, mental and physical, it is capable either of exciting or of variously modifying the actions of all the different moving solids of the body; but that, when not itself impressed by any of these agents, it appears from all that we yet know on the subject, to be absolutely passive and inert in regard to all these moving solids.

The considerations which I have now stated appear to me sufficient to shew, that the same conclusion may be extended to the connexion of the nervous system in the living body with secretion; and in another paper I shall endeavour to shew that we have good grounds for forming the same conclusion in regard to its connexion with animal heat.

Some Remarks on certain Modifications as well as Modes of Treatment of Spinal Affections. By J. K. Walker, M. D., of Caius College, Cambridge, and Senior Physician to the Huddersfield Dispensary.

[From the London Medical Repository for Sept. 1820.]

The recently awakened attention of the Profession to spinal pathology, and the enthusiasm with which this subject has been lately prosecuted, added to the mass of conflicting evidence relative to the diseases of this part, have induced me to seek every opportunity of drawing from that legitimate fountain of medical improvement, the morbid anatomy of its structure, such solid testimony as we usually give when exploring the maladies of other parts, and which no other mode of investigation can so effectually supply. Few of our countrymen, who have lent themselves to this interesting department of medical science, have superadded to the fruit of their inquiries the corroborative evidence of *post*

mortem examinations. To the credit of the continental writers be it spoken, they have applied themselves with assiduity to this source of information. Frank, Portal, Ludwig, and some others, have enriched our art with many important facts, solely from a more frequent inspection of the spine in its diseased state. Some of these physiologists, indeed, have carried their speculations so far as to ascribe a variety of spasmodic diseases solely to the morbid agency of this part, or of the nerves transmitted from the medulla spinalis to the seat of the disease. It is probable that the theory of these writers, which ascribes many of those painful affections of the back and loins which accompany hæmorrhoids, menstrual, and other obscure affections of the thorax and abdomen, to a supposed irritation at the origin of the various spinal nerves, is not altogether groundless. They have made it very probable, from dissections, that considerable turgidity of the vessels of the spinal chord exists in many of these cases; and this local congestion they have termed "plethora spinalis." With regard to the ascription of chorea*, tetanus, epilepsy, colica pictonum, &c. to a similar cause, (a position broached by many foreign Physicians,) so long as we meet with dissections of these cases without any such appearances in the spine, and others with evident marks of injury of the brain *alone*, it is illogical and absurd to draw such sweeping inferences, unless we are prepared to maintain, that the medulla spinalis has a more important influence in the animal machine than the encephalon itself, or that when diseased it is more alarming in its consequences than even a similar malady of the brain. Indeed, such affections will often come to be synchronous; so that it shall not always be easy to decide in which the affection first began; but the keenest advocates of spinal influence will hardly assert such influence to be paramount even to the sensorium itself. Next to the reveries of a Gall and a Spurzheim, this, indeed, would be the most preposterous.

* We continue to receive strong evidence, from dissection, of the frequent connexion of this disease with medullary inflammation of the spine. I have perused few more striking exemplifications of this than in a case of tetanus, communicated to me by my friend, Dr. Fregr, of Leicester, who, I trust, will be induced to give it that publicity which the interesting nature of the case, as well as its able treatment, deserves. It appeared, on examining the spinal chord, that the dura mater of the medulla spinalis had been affected with intense inflammation in its whole extent, it appearing of a chocolate colour, similar to contusion, but more especially so in the region of the upper cervical, of the fifth dorsal, and the lower lumbar vertebræ. The pia mater was similarly affected; but the distended vessels were more distinct and tortuous.

I hope it will hereafter be in my power to furnish other dissections of this part of greater interest. The one I shall now relate is the appearance of the spine, on dissection, of a fatal case of lumbar abscess, which had been considered and treated in its incipient stage as a mere case of lumbago, with the use of liniments alone, until the tumor in the thigh gave unequivocal indications of the existence of psoas abscess, which was the period, indeed, when it first became an object of my treatment. The origin of the psoas muscles, from the sides of the upper vertebræ lumborum, and from the roots of their transverse processes, would induce us, *a priori*, to suppose that any serious detriment in the spinal canal of that part might communicate itself to the contiguous muscles; but in the case here recorded, not only three of the lumbar vertebræ were partially carious, but traces of inflammation in the membranes of the chord itself, with a slight effusion, also were discernable. The history of this case would occupy more space than my readers might think warrantable; but enough, I think, is here stated, to prove the necessity of attention to the early manifestations of this disease. It is not contended, that the most energetic practice would ultimately have arrested this formidable malady; but it is plain, that in a part so sensitive as the spine, a timid temporizing treatment is to the last degree pernicious. If, however, such an oversight occur occasionally, it is equally true, that a simple case of lumbago has been dignified in its turn into a spinal affection; and so prevalent, indeed, is the spinomania (if I may so term it) in some places, that the slightest pain in the vicinity of the vertebræ is proof enough with many of disease in that part; and what was, in fact, no more than an ordinary case of chronic rheumatism, has been met with all the active treatment of a genuine spinal disease, and perhaps incarceration in the recumbent posture for many months. One consequence of this indiscriminate and indiscreet practice is, that it has given birth to some curious empiricism; and it will hardly excite surprise, when the reader is told that other pseudo cases like these, readily removed by friction have been quoted as instances of cures of diseased spine, without any of the ordinary resources, (such as leeches, blisters, caustics, or confinement,) and that a liniment is all that is necessary for the removal of inflammation in the spine, which in less important and less sensible parts requires the aid of the most active remedies to remove. Do I contend, then, for the impropriety of such application in every stage of spinal disease? Assuredly not; no more than I should dispute the propriety of a liniment to a swelling of the knee joint, after every symptom of inflammation was removed: but what should we think of the judgment of that Practitioner, who, with evidence of a deep-seated

inflammation in that part, should neglect the use of leeches, &c. for the sake of a favourite liniment? None but those who are aware of the insidious nature of spinal disease in its nascent state, and the subsequent ravages which often ensue on a neglect of its early manifestations, can properly appreciate the consequences of oversight in this particular. That Practitioner will be deceived, who expects invariably to find altered structure of the spine as a necessary condition of a disease there. Tumours and effusions may exist so as to cause compression on the medulla spinalis, and yet no inequality or deviation be manifest to the eye or the touch. We have examples on record of idiopathic active inflammation of the spinal chord (as appeared on dissection), without any disease of the brain, and without any distortion, where pain in the peccant part was almost the sole clue to the affection. We have equally well attested instances of dissection, where the disease occurred under the form of chronic inflammation, of which three cases are related by Brera*. In the first of these the spinal marrow was soft and flaccid, and partially suppurated, and its investing membranes covered by a puriform fluid. In the second, the cord itself was suppurated. Its investing membranes and the periosteum lining the vertebral canal were partially destroyed, *but the vertebræ and their ligaments were sound.* If the constitutional symptoms which accompany this affection of the medulla spinalis were more uniform, less danger might exist of its being overlooked; but so mutable and uncertain are they, that there are scarcely two patients that present the same routine of symptoms; and if they come to be cotemporaneous, and complicated with other affections, the difficulty of diagnosis is still greater. Wherever, therefore, the state of the pulse and pain in the spinal region create any suspicion of this latent malady, it has always been my practice to apply and repeat the leeches, until a mitigation takes place in those symptoms. But it is probable that the number of cases of spino-medullary inflammation is small, when compared with those where the inflammation involves the substance of the vertebræ, or their intermediate cartilages and ligaments. The nature of this affection is now so generally understood by the Profession, and the symptoms which are supposed to accompany it, have occupied the pen of so many foreign as well as writers of our own country, that the difficulty is to extract what is valuable,

*The same author quotes instances of induration and of extravasated blood within the spinal chord, where the vertebræ were sound: and a case of paraplegia is related by Copeland, where, on dissection, no disease could be observed in the vertebræ; but within the lower dorsal and first lumbar, the spinal marrow was entirely wanting for more than two inches,

and, amidst so many glittering materials, to select the real metal from the base. It appears, from the various dissections of several of those patients who died under this disease, whose spines were curved in various degrees, and whose limbs were paralytic, that in infants and children, and in those who had been afflicted but a short time, the ligaments connecting the vertebræ, which formed the curve, were slightly thickened, and the cartileges between the bodies of the vertebræ much compressed; but in others, who had so long laboured under this disease as to have been destroyed by it, or by its consequences, the corpora vertebrarum were carious, the interjacent cartilages being totally destroyed. Whatever other symptoms accompany this morbid state of the vertebral column, (*and there is scarcely a viscus in the human body that has not been affected by it,*) the tendency to caries is evidently the first thing to be obviated—neglect this, and the effect will be distortion, or anchylosis, with the probable destruction of the general health of the patient for life. It will occasionally happen that the most skilful and energetic treatment is insufficient entirely to arrest this disorder, especially if it be combined with a scrofulous diathesis*; a combination, though not infrequent, yet not a necessary concomitant, as some have contended. Here the maxim "principiis obsta" is peculiarly appropriate; and if there be any truth in the position, that the primary cause of the caries and all its attendant consequences resides in the spine itself, it will readily be conceded that early topical applications, which may abate the tendency to inflammation, are indicated. I have had ample opportunities of witnessing the beneficial effect of this treatment, and the almost invariable relief from the application of leeches to the suspected part. It is much to be regretted that in all

* In many instances, it is true, strumous tubercles in the lungs, and a distempered state of some of the abdominal viscera, have been found to co-exist with spinal disease. Mr. J. Delpech (vide *Précis Elémentaire des Maladies Réputées Chirurgicales*,) thinks that those small spherical tubercles, which, when situated in the lungs, are one of the causes of consumption, may and do exist in the tissue of muscles, tendons, ligaments, and even in the substance of bones. He supposes that on attentive examination these scrofulous tubercles will be detected on the surfaces of these bones, or in the very centre of the osseous substance. At different periods of the disease he has found tubercles situate at various depths, in the long tissue, and in the surrounding soft parts. He has observed them at different periods after their formation, and in different stages of the disease, the cavities in the diseased bones still containing the pulpy matter, into which the tubercles are converted when they change their form and consistence; but even on the supposition that the formation of tubercles takes place in scrofulous subjects, independent of original inflammation, *yet, as foreign bodies, they are liable to produce inflammation of the parts in contact with them.*

doubtful cases this expedient is not adopted, which in painful affections, whether of the spine or only of the contiguous muscles, is almost always productive of benefit, *and may prevent a caries and probable disorganization of the vertebræ.* The number of carious spines is not likely to be diminished while the contrary practice is followed; and, as I have before observed, if the use of liniments, or any other inert practice, is allowed to supersede this timely vigour, many a credulous patient may live to rue, when it is too late, the loss of stature and of health. While, however, I have to lament that any delusion should have existed as to the real nature of the disease I am now discussing, I am gratified to find that almost every practitioner of real merit has come to the same conclusion, as to the utility of issues, aided *occasionally* by the recumbent posture, which of course, will vary in duration, in proportion to the extent of the affection. Steel stays, swings, screw chairs, &c. have all been tried; but experience has now shown that much judgment is requisite in their employment, to prevent them from exasperating the affection. Those who have acquired the greatest celebrity in the invention and employment of machinery to throw the weight of the superincumbent column upon the pelvis, have found it necessary to premise in some instances active local applications. Mr. Cheshire, of Hinkley, would never have gained the high reputation he now enjoys for the treatment of spinal cases, if he had blindly applied his excellent apparatus for the support of the spine, without ascertaining, in the first place, whether there was not some local inflammation to be removed—some symptom which demanded active medical treatment. I should conceive, that where the intervertebral substance is destroyed, the anchylosing process would be retarded by a separation of the approximating surfaces of the adjacent bones. I have hitherto called the reader's attention to those cases where more or less pain in the spinal column indicated the presence of active symptoms; and I trust I have shown the fallacy of that treatment, which, where inflammation exists, is worse than frivolous—*I mean the premature use of liniments.* There is, however, a class of cases which may be materially benefited by them, and which, to an unprofessional examiner, or even to a prejudiced Practitioner, might pass for spinal diseases. I think I shall be borne out by the experience of those who have been much in the habit of examining the vertebral column, that there occasionally occurs in the dorsal portion a very discernable lateral inflexion, of which the convex portion inclines to the right, without *the slightest pain* on examination. This, however, I have observed oftenest in children, where there is unusual delicacy of habit; and I am

confirmed in this opinion by a similar remark made by Professor Hufeland of Berlin, who states also, that he has recommended, with great success, the occasional bathing of the spine of children so affected with some spirituous lotion, or even common brandy. This constitutional debility, let it be remembered, may create a similar appearance in more advanced age, or it may be the consequence of some original malconformation. I am ready to admit, however, if there is any supervening declension of the general health, the vigilance of the Practitioner cannot be too soon directed to that part. Every one is aware, during the period of dentition, how many anomalous symptoms arise in children; how very flexible is their spine, and how often does it assume an appearance of deformity, so as to excite an alarm, and even sometimes to deceive the Practitioner. In some perhaps, from bad nursing, a slight tendency to deviation may arise, so as to call for the greatest vigilance to establish the rectitude of the vertebral column, yet no tenderness may be present*. Those who reason on the omnipotence of the spine to produce disease, seem to forget that there is also such a thing as muscular power concerned in maintaining the erect posture of the body, and that if any cause exists, which has impaired the integrity of such muscular power, the patient may not be always able to sustain the perpendicular position, and may acquire a habit of leaning in one direction, so as to give a fallacious appearance to a superficial examiner. Whenever, however, such a patient, on assuming the recumbent posture, becomes perfectly *straight, and free from pain on pressure*, it is absurd to designate such a case a spinal affection. Such a case *might possibly be relieved by liniments*, or by the use of the emplast. roborans; yet we should not be warranted in pretending that these remedies were a cure for diseased spine. Where, however, a tendency to become awry is observed, the avoidance of too long continuation in the erect attitude, and the adoption of the recumbent posture for an hour or two in the middle of the day, for several months, furnish the best mode of arresting any incipient deformity. It is well known, that young persons are taller sometimes by half an inch in a morning than at night, which arises solely from a removal of pressure upon the spinal column; and by analogy, as well as by experience, we are sure that such an expedient

*If the cause which is ordinarily assigned for the more frequent prevalence of curvature to the right side is founded in truth, viz. the more frequent use that we are in the habit of making of the right arm, be not erroneous, the caution sometimes given to children to use their right hand rather than the left is evidently incorrect.

will relieve, and frequently remove any tendency to deviation, especially in growing children, where the bones are softer than usual. Of course, if any one of the vertebræ protuberate,* and become tender, additional means will be required, such as I have above alluded to. I have been induced to transmit these cursory remarks, because, obvious as they may appear, they cannot be superfluous, while such indefinite notions and such inconsistent practice are still persevered in. The history of medicine, unhappily, affords us too many instances where favourite medicines have been extolled as specifics in one generation, and shortly consigned to oblivion the next; not, indeed, because they were not useful remedies, but because they did not equal the splendid expectations which their sanguine discoverers attached to them. Our age will have the credit of bringing to light many important facts relating to spinal pathology; but it depends upon ourselves to stamp perpetuity upon these discoveries. The overweening fondness of a parent has destroyed many a child; nor can the many valuable materials, elicited from this mine of medical knowledge, save us from the derision of posterity, if we content ourselves with the glittering materials which lie on the surface, too idle to explore the massy and more valuable materials that lie below. My concluding sentence I extract from Baglivi—"Ars medicinæ necessario conjecturalis est; non nihil autem hujus incertitudinis et inconstantiæ preposteris argumentandi speculandique modis attribuendum est: nec mirum est, si, neglectâ verâ sede et veluti fomite morbi, falsas inde deducant conclusiones, et curationes talibus innixæ conclusionibus ex voto non respondeant."

[We shall be excused for soliciting the attention of our young readers especially to the intimations and cautions contained in this valuable paper.—Ed.]

* May not a protuberance of the spine arise occasionally from defective nutrition of the bones, or perhaps from a want of due secretion of phosphate of lime? A medical friend of mine acquaints me, that he is in the habit of administering phosphate of lime internally in analogous cases, where he suspects osseous innutrition, not without seeming benefit. Whatever strengthens the constitution, is certainly of service; and particularly cold bathing, provided that, in adjusting the temperature, due attention be paid to the season of the year, habits and strength of the patient, &c.

Some observations on a mode of performing operations on Irritable patients, with a case where the practice was successfully employed. By James Wardrop, Esq. Surgeon extraordinary to the Prince Regent.

[From the Medico Chirurgical Transactions, Vol. VII.]

It is not uncommon to meet with persons who have diseases which can only be relieved by an operation, but whose minds are so irritable, that although convinced of the propriety of such a measure, yet when about to submit to it, their courage fails, and they wrest themselves from the hands of the surgeon and his assistants by a convulsive effort.

A difficulty, from another cause, occurs in infants and children, when an operation is to be performed in which any particular mechanical neatness or dexterity is necessary. The difficulty in this case can generally be overcome, by inclosing all the body, excepting the part to be operated on, either in a bag or wooden box.

But patients of the former description are not so easily managed, and examples are by no means rare, where persons have suffered severe distress or even died, from diseases which they were convinced might have been relieved by a surgical operation. I remember an officer with a tumor at the angle of the lower jaw, which he himself was anxious to have removed, but when the knife was about to touch the skin, his courage failed him. After three or four unsuccessful efforts of this kind, he determined to allow himself to be tied "hand and foot," which, after having been accomplished with some difficulty, the incision was begun, and he then became tranquil, and the operation was easily finished. But by many, a process like this would never be submitted to; and I have heard patients who had been operated on for the stone, declare, that the binding of the hands and feet was by far the most distressing part of the operation.

It therefore still remains a great desideratum in surgery, to contrive a mode by which patients of the description alluded to, can be induced to submit to operations, and, as the practice which I have adopted in the following case may be applicable under similar circumstances, it may be worth while briefly to relate it to the Society.

A young woman of a robust form had a tumor on the orbitar plate of the left frontal bone, the base of which adhered firmly to the bone, whilst the exterior portion was attached to the integuments, in which their was a small sinus leading into the interior of the tumor. The diseased mass did not exceed the bulk of an almond, but it was attended with great pain, and even cautiously

touching the orifice of the sinus with a probe, excited violent irritation. A tumor had been extirpated from the seat of this swelling, some months previously, a portion of which adhering to the bone being left behind, gave origin to this new growth.

Though she had come from a distance, determined to get the disease removed by an operation, if it was considered advisable, yet, when the scalpel touched the integuments she made a violent resistance. A second attempt was made, having previously secured her on a table with numerous assistants; but such was the force and exertion she made to extricate herself whenever the operation was about to be begun, that every hope of success was abandoned.

As the only resource, it then occurred to me, that if she would allow herself to be bled to a state of deliquium, the tumor might be extirpated while she remained insensible.

After a few days she submitted to this measure, and a large vein was freely opened while she sat in the erect posture, in a very warm room, in which there were seven people, with the doors and windows kept shut to hasten her fainting. No less than fifty ounces of blood were drawn before she fainted, and then a complete state of syncope came on, which lasted a sufficient time to allow the tumor to be removed.

With the assistance of Mr Young, the operation was accomplished with great facility; and in order to produce an exfoliation of the diseased portion of bone, its surface was rubbed over with kali purum. When the fainting went off, she would not believe that the operation had been performed, until she examined her face in a glass.

She suffered little from the effects of the operation, and though she remained pale and feeble for a few days, from the profuse bleeding, yet in a week, she was better than most patients are, who have undergone so severe an operation; and she rapidly recovered her wonted strength without in any way appearing to have suffered from the loss of blood.

The quantity of blood which was in this instance drawn, may to some appear enormous, but I was emboldened to proceed to that extent, from having almost universally observed, that those patients recovered from operations best, who lost the greatest quantity of blood; a fact strikingly illustrated after the battle of Waterloo, when it was found, that the wounded who were left in the field, and not taken into hospitals till the fourth and fifth day after the battle, recovered much sooner than those who were immediately attended to. This difference could only be accounted for, by the bleeding from the wounds being so extensive as to produce syncope; thus preventing inflammation and fever.

Nevertheless, it has not been my intention to recommend this mode of practice for general adoption. The result will shew, that, were circumstances equally urgent to suggest its employment, it may be ventured upon fearlessly.

On Affections of the Meatus Auditorius Externus. By Henry Earle, Esq. Surgeon to the Foundling Hospital, and Assistant Surgeon to St. Bartholomew's Hospital.

[From the Medico-Chirurgical Transactions, Vol. X.]

The sense of hearing is so important to the safety and happiness of mankind, and a partial or total loss of it deprives us of so many sources of information and pleasure, that it is certainly to be lamented that the treatment of the diseases of the ear should have been so long and so generally neglected by the profession at large. It will not, I trust, be deemed presumptuous in me to express a hope, that from a judicious application of the improvements which have taken place in modern surgery, to the treatment of these diseases, some benefit may yet be derived; and perhaps some affections of the internal organ, hitherto considered incurable, may be arrested in their progress by the early adoption of the most active and powerful measures. Should, however, our hopes of affording relief in the more obscure diseases of the labyrinth, prove falacious, we may yet be able to discover causes of deafness in the external ear and cavity of the tympanum, which have not hitherto been described, and which may partake of the nature of diseases affecting other parts of the body, and readily yield to the operation of known remedies.

I have been induced to make the above remarks, and to believe that much remains to be investigated in this unexplored path, from having met with an affection, which I shall proceed to relate to the Society, and which has I believe been wholly overlooked, though it is by no means improbable that it may have been not unfrequently the cause of deafness.

In the early part of 1816, Mr. F. an ensign in his Majesty's service, called to ask my opinion respecting a complaint in his ears, of which he gave the following account;

That from childhood he had been occasionally liable to attacks of inflammation in the external ear, accompanied with heat, excoriation, and a copious thin discharge from the passage, which

affected his hearing, more or less, for several weeks, but left no considerable permanent deafness behind. About ten months before his application to me, he had been exposed to damp, and, in consequence, suffered a very severe renewal of the same disease, which so nearly deprived him of the power of hearing, as to oblige him to leave his regiment, then quartered in Ireland, in pursuit of further advice, with an understanding that unless he could obtain some relief, it would be necessary for him to quit the service, as he was quite incapacitated from active duty, by not being able to hear the word of command.

On examination, I found the meatus of either ear much narrowed in its calibre, by the thickening of the surrounding parts, and especially the great increased density of the cuticle, which had a very white appearance, and was moistened by a thin discharge, resembling runnet whey, that deposited a substance not unlike small portions of curd. On washing this away, and dilating the passage with a little instrument, which I had constructed for the purpose of examining the external meatus, there was not the slightest appearance of cerumen; but the same white thickened cuticle appeared to extend as far as the eye could reach.

The sense of hearing was nearly lost, but a watch applied to the teeth or forehead was distinctly audible, a circumstance which convinced me that there was no defect in the auditory nerves. On throwing in water with considerable force, a dull obtuse sound was produced as if some dense medium were interposed. This led me to imagine that it was possible that the deafness depended either on a thickened state of the cuticle reflected over the membrana tympani, similar to that which lined the meatus, or on some morbid secretion existing between this cuticular layer and the membrane. This idea was strengthened by passing down a probe to the bottom of the meatus, which conveyed a sensation to my touch different from that which would have been produced by the contact of a healthy membrane; whilst at the same time it did not cause that painful sensation usually expressed by the patient in these circumstances.

After a little reflection, and entertaining this view of the subject, I thought myself warranted in attempting the removal of the whole cuticular lining of the meatus externus. I hesitated less in making this experiment, as all common remedies had been resorted to in vain, and the case appeared almost hopeless, unless some new mode of treatment could be devised.

To effect this removal, I had recourse to the nitrate of silver, which I had often found beneficial in causing exfoliations of

thickened cuticle from the feet, producing what are commonly termed corns.

I threw in with a silver syringe a very strong solution, and completely blackened the epidermis of the meatus.

In a few days I began to syringe with warm water, conceiving that maceration would contribute to the speedy separation of the exfoliations. After persevering for several days, for a considerable time each day, it began to be detached in small portions at first, but subsequently in larger pieces, one of which, from its form, was very evidently the reflected layer which had covered the membrana tympani. The next syringe-full which I threw in occasioned to the patient a very distressing sensation and loud sound. His hearing from this time was greatly improved, but still rather confused. The other ear was treated in the same way with similar success. In a few days the hearing was very nearly restored.

From the time of the separation of the cuticle, the treatment consisted in the application of ungt. hydrarg. nitratis ʒiv. cerati cetacei ʒiij. olei olivæ ʒj. He was directed to introduce a little of this, night and morning, with a camel-hair pencil; this was recommended with a view to stimulate the ceruminous glands to a more healthy secretion. Blisters were also directed to be applied behind the ears, and to be kept open for some time with the same intention. Soon after this, he returned to join his regiment, and I lost sight of him until very lately, when I had the pleasure of seeing him perfectly well; and he informed me that he had never experienced the slightest return of his complaint, and could hear as well as he had ever done in his life. On examining his ears, I found that a secretion of cerumen had taken place, and the lining of the meatus had a perfectly healthy appearance.

This very favourable result induced me to reconsider the subject, and to examine most of the authors who have treated of diseases of the ear; from their silence on the subject, I am inclined to think this peculiar affection has escaped their observation. Mr. Saunders, indeed, in speaking of the herpetic ulceration of the external meatus, mentions that it is accompanied with thickening of the lining, but does not seem to have suspected that a similar affection might extend to the reflected portion which covers the membrane; a state which must more or less impede the functions of that part, and, if suffered to increase, would probably terminate in permanent and complete deafness. On the ground, then, of its novelty, and from a wish to have the subject further investigated, I have ventured to bring this case before the Society, though I am well aware that insulated facts are rarely deserving

the attention of the public, and ought at all times to be received with caution.

The cause of this thickened state of the epidermis may, I think, be traced to the thin ichorous discharge which takes place in the room of the healthy cerumen. It is well known that cuticle, in common with other substances possessing the same properties as the hoofs of animals, is liable to imbibe moisture, by which it becomes thickened, loses its transparency, is thrown into folds, and assumes a whitish colour. This fact is familiarly known to occur in the hands of washer-women, and when poultices have been applied for any time. Whilst this rugous state exists, the sense of touch is rendered very imperfect; but this appearance is soon lost on the evaporation of the moisture, and the cuticle resumes its former characters and functions. There is always, however, a separation of whitish curdy substance, which, on becoming dry, assumes the appearance of a powder, having a greyish tint, similar to that produced by scraping the cuticle with a knife. Considerable quantities of this will sometimes come away from the feet, if they have not been constantly subjected to ablution and friction, and it appears to be similar to the exfoliations which take place on a larger scale, from the sole of the horse's hoof.

In the case now under consideration I believe that, by the continued application of moisture, the whole cuticle was thickened, and rendered opaque. Under such circumstances, it is easy to comprehend to what an extent the sense of hearing must have been impaired, as those minute and delicate vibrations of the membrana tympani, which convey the undulations of the surrounding elastic medium to the internal ear, must have been greatly impeded, if not wholly prevented.

The curd-like substance which was found in the external meatus very closely resembled the furfuraceous separation which has been described as taking place from moistened cuticle, and most probably was of the same nature, as it was collected on the surface, and could be scraped off in considerable quantity with the flat end of an eye probe. In the early stages of this complaint it is probable that the injection of astringent washes, clearing the meatus from all extraneous matter, and anointing it with some stimulating ointment, would be all that would be required: should it however be suspected that the cuticular covering of the membrana tympani was much thickened, the treatment adopted in the case above related, might be had recourse to with every hope of success.

The lining of the external meatus, in common with the integuments of the rest of the body, is liable to various affections, some of which may be attended with considerable difficulty of hearing. A gentleman once requested me to examine his ears in conse-

quence of a deafness which he had laboured under for some time. The symptoms he described very much resembled those usually attending an inspissation of the cerumen. On examination I found the whole passage choaked up with numerous scales, closely impacted together with a morbid secretion of cerumen. He had from childhood been subject to attacks of lepra vulgaris, which latterly never entirely left him, and at times spread over nearly the whole surface of his body. With some difficulty the passage was cleared of its contents. He was directed to syringe the ear every morning with a decoction of bran, or barley water, and to smear the surface with an ointment consisting of equal parts of ung. zinci, ung. hydrargyri nitratis, and ceratum cetacei. I likewise recommended him to take a strong decoction of sarsaparilla, with alterative doses of hydrargyri oxymurias. Under this treatment his general health improved much, and his cutaneous affection was mitigated. By persevering in the use of the syringe and the ointment his hearing was nearly restored.

I have met with one instance similar to the above, in which the patient, who was advanced in life, neglected to pursue the measures prescribed, and has, in consequence, been repeatedly under the necessity of having recourse to his medical attendant for the removal of the cuticular exfoliations and impacted cerumen, which never fails to afford him temporary relief.

Some time ago I was consulted by a lady on account of an affection of the ears attended with some peculiar circumstances. From her birth she had never had any proper secretion, the meatus was unusually dry, and the substance which was deposited bore none of the external characters of cerumen. She had two brothers and a sister who were all similarly affected, and one of her eldest brother's children was deaf and dumb, and the others were affected with difficulty of hearing. At times, when she had been exposed to damp, or was disordered in her health, the secretion was more abundant and much thinner; this irritated the passage, and the whole ear had an erysipelatous redness, accompanied with considerable tumefaction and distressing deafness. At the time when I saw her, she had been suffering from one of these attacks, and her health was much disordered. The natural form of the ears, particularly of the right, contributed much to increase the degree of deafness. The meatus was more curved than usual, and the tragus was so long, and projected backwards so much, that when swelled by inflammation it completely closed the aperture. To obviate this, she was continually drawing it forward with her finger, and introducing instruments into the passage, which tended much to keep up the irritation. I directed such medicines as I thought were calculated to improve

her health, and endeavoured to sooth the local inflammation: still, however, the passage remained nearly closed, the sides being much approximated by the thickened state of the whole ear, apparently from interstitial deposit. To remedy this, I recommended that she should have a portion of sponge tent introduced every night into the meatus; in a short time, by this plan, the passage was considerably dilated, and her hearing much improved. She remained well for near a twelvemonth, when she again sent for me, on account of a severe erysipelatous attack in the right ear, accompanied with copious ichorous discharge. I recommended her to syringe it night and morning, and when the inflammation was a little abated, to anoint the passage with the ung. hydrarg. nitratis mitius. She improved rapidly under this treatment, and by persevering in the use of the ointment and syringe, she has experienced no return for several months, and can now hear better than she had done for many years.

This latter case shews, in a marked degree, the important part which the cerumen acts in the due performance of the functions of the ear. A deficient or vitiated secretion generally induces a diseased state of the integuments, which may become so thickened as to cause an obstruction in the ceruminous ducts, and thus maintain the disease. The cases which I have had the honour of submitting to the Society, sufficiently prove the importance of paying attention to the state of this secretion, and of the integuments which line the meatus, and will perhaps authorize us to hope, that, by the application of suitable remedies, many distressing cases of deafness may be palliated, and some permanently relieved.

History of a case of Nephritis Calculosa, in which the various periods and symptoms of the disease are strikingly illustrated, and an account of the operation of Lithotomy, given by the patient himself. By Alex. Marcet, M. D. F. R. S. one of the Vice-Presidents of this society.

[From the Medico-Chirurgical Transactions, Vol. X.]

The subject of this remarkable case is a gentleman about forty years of age, who, to the advantages of a liberal education, unites an uncommon share of cheerfulness, and a firmness of mind which does not forsake him under the most trying circumstances. His habits are those of great activity, and he has long filled public situations of considerable labour and responsibility.

In the retrospective view of the circumstances of his illness, with which he has himself furnished me, he divides it into four

periods. During the first, which he traces as far back as the year 1801, while otherwise in perfect health, he began to discharge calculous matter, which, however, occasioned at first but little pain, and none of the sensations in the region of the kidneys which became afterwards a source of so much suffering. This calcareous discharge consisted in a white chalky substance, generally passed immediately after voiding his urine, and enveloped in a quantity of thick mucus. In the course of 1802, however, this discharge became almost constant; some irritation was produced at the neck of the bladder and in the urethra, a troublesome chordee occurred, and the mucus frequently came away slightly tinged with blood. The calculous substance was at this time discharged in the form of a pretty stiff paste, which hardened on standing, and crumbled between the fingers into a white powder, in which sparkling crystalline particles could be discerned.

At this period the patient was about twenty-three years of age, of a tall and robust structure, and exceedingly fond of bodily exercises, in some of which he excelled in a remarkable degree. His general health was perfectly good.

The second period seems to have been connected with a change in his mode of life. Towards the end of 1803, his habits became extremely sedentary, and in 1804, he became subject to violent paroxysms of pain in the lumbar region, which were immediately attended by violent retchings, and more or less obstinate constipation. Under these circumstances cathartics were instantly rejected; but it often happened that a dose of laudanum sufficiently allayed the pain to enable him to retain the cathartic; and whenever a passage through the bowels was obtained, the nephritic symptoms were considerably relieved.

During these attacks, whether in or out of bed, it was hardly possible for the sufferer to place himself in any position which could afford him material relief. But that into which he invariably endeavoured to throw himself, by a kind of irresistible impulse, consisted in inverting his body as much as possible, which he effected by elevating his lower extremities and body along the bed-post, with his head downwards, and resting entirely upon his shoulders. During this period no calculous matter was passed.

In 1806 and 1807, these attacks became less frequent, which the patient ascribed to his duties having become less arduous, and his habits less sedentary; and in November, 1810, they ceased altogether. During the prevalence of the paroxysms, very little, if any, of the calcarerous matter was passed, but there still was occasional irritation about the neck of the bladder, and he was subject to a troublesome degree of flatulence and constipation, which required the use of frequent aperients, and in par-

ticular of magnesia, from the habitual use of which he derived considerable relief. In other respects his constitution remained sound, and his strength and spirits unbroken.

Soon after the cessation of paroxysms just mentioned, our undaunted sufferer was assailed by symptoms of a still more severe description. Here begins the third period; a stone had formed in the bladder, with all the well known train of sufferings it produces. First, increased irritation at the neck of the bladder, tormenting itching and shooting pains at the extremity of the urethra, violent chordee in the night-time, a difficulty of passing his urine, which was frequently tinged with blood, &c. The patient now became incapable of riding or dancing, and even walking became very troublesome.

These symptoms gradually increased, till they arrived at the utmost pitch of severity. However familiar they are to physicians and surgeons, it will not perhaps be without interest to hear them described by the patient himself, whom, after an acquaintance and professional attendance of several years, I can state to be much more apt to underrate than to exaggerate his sufferings.

"The only position," says he, "in which I could succeed in passing my urine, was upon my knees, with my forehead placed upon the bed or sofa, and the urinal under me. All changes of posture were dreadful, especially from the erect to the recumbent position. Getting into or out of bed were the severest trials, especially the former. I have often made repeated attempts at different modes of accomplishing this object, and resolution has failed, when at length, having succeeded so far as to get into bed on my knees, with my head placed as low as possible, I have not had courage to move, till, in a state of exhaustion, I have cautiously extended one limb and gradually got upon my side. When awoke by irritation and pain, I have endured it as long as I could, rather than move; and when goaded to an effort, I usually regained the position on my knees, and after waiting the subsiding of the chordee, endeavoured to obtain relief by passing my urine. While labouring under these unpleasant effects, they were almost constantly increased by costiveness and flatulence; the use of the hip-bath, sitting over the steam of warm water in the pan of a night table, aperient medicines and injection with an elastic gum-bottle, were the palliatives to which I had recourse."

Until then, though his own suspicions were almost amounting to a conviction that he had a stone in his bladder, yet he had never been sounded, and therefore some doubt still remained in the minds of his friends as to the precise nature of his disorder. He was advised to go to Brighton, for the purpose of using the

tepid bath. The motion of the carriage during the journey produced so much pain and irritation, that he declares that, even now, he almost shudders at the recollection of the torture he endured. Still, even at this period, he had intervals of ease, during which his spirits were good, and he almost appeared to be in perfect health.

One day, while at Brighton, in December 1811, and after an unsuccessful attempt to sound him, made by a medical person, he seized upon a bougie and introduced it himself into his bladder. He then distinctly felt the bougie graze upon a hard substance, and upon withdrawing it, he found the point strewed with glittering particles of calcareous matter. Immediately on his return to London, a consultation was held, in which the presence of a stone having been fully ascertained, he was advised to undergo the operation of lithotomy, upon which he instantly made up his mind; but as the introduction of the sound was followed by the discharge of a few calculous fragments, which afforded a glimpse of hope that the calculus might be entirely discharged in that way, a second consultation was held, at which it was agreed that a delay of a month would be allowed, with a view to the possibility of such a happy termination. Those hopes, however, proved entirely groundless, and on the day before the month expired, Mr. Cline performed the operation.

However familiar all the circumstances of this severe operation are, no doubt, to most of the members of the Society, a description of the patient's sensations, drawn up by himself, cannot, I think, fail to excite some interest, and I shall make no apology for introducing it in his own words:

"My habit and constitution being good, it required little preparation of body, and my mind was made up. When all parties had arrived, I retired to my room for a minute, and bent my knee in silent adoration and submission, and returning to the surgeons, conducted them to the apartment in which the preparations had been made. The bandages, &c. being adjusted, I was prepared to receive a shock of pain of extreme violence, and so much had I over-rated it, that the first incisions did not even make me wince, although I had declared that it was not my intention to restrain such impulse, convinced that such effort of restraint could only lead to additional exhaustion. At subsequent moments, therefore, I did cry out under the pain, but was allowed to have gone through the operation with great firmness.

"The forcing up of the staff, prior to the introduction of the gorget, gave me the first real pain; but this instantly subsided after the incision of the bladder was made, the rush of the urine appearing to relieve it, and sooth the wound.

"When the forceps was introduced, the pain was again very considerable, and every movement of the instrument, in endeavouring to find the stone, increased it. Still, however, my mind was firm and confident, and, although anxious, I was yet alive to what was going on. After several ineffectual attempts to grasp the stone, I heard the operator say, in the lowest whisper, "it is a little awkward, it lies under my hand. Give me the curved forceps:" upon which he withdrew the others. Here, I think, I asked if there was any thing wrong, or something to that purport, and was reanimated by the reply, conveyed in the kindest manner: "Be patient, sir, it will soon be over." When the other forceps was introduced, I had again to undergo the searching for the stone, and heard Mr. Cline say, "I have got it." I had probably by this time conceived that the worst was over; but when the necessary force was applied to withdraw the stone, the sensation was such as I cannot find words to describe. In addition to the positive pain, there was something most peculiar in the feel. The bladder embraced the stone as firmly as the stone was itself grasped by the forceps; it seemed as if the whole organ was about to be torn out. The duration, however, of this really trying part of the operation was short; and when the words "now, sir, it is all over!" struck my ear, the ejaculation of "thank God! thank God!" was uttered with a fervency and fulness of heart which can only be conceived. I am quite unable to describe my feelings at the moment. The most captivating vision to the sight, the most enchanting harmony to the ear, or a combination of every thing that is calculated to delight the senses, must fall far short of the perfect blessedness of my situation. There was a feeling of release, not from the pain of the operation, for that was gone and lost sight of, but from my enemy and tormentor, with a lightness and buoyancy of spirits, elating my imagination to the belief that I was restored to perfect health as if by a miracle. Yet, with all this elation, a disposition of mind perfectly tranquil and collected, nor were my nerves in the slightest degree affected. I never heard what was the precise duration of this operation, but conceive it to have been between twelve and fifteen minutes. With respect to the pain, I am persuaded that if it were possible to concentrate what I have often suffered in one night, into the same space of time, it would have been less endurable. Indeed, this difference between the operation and one night's endurance of the stone was manifest. I have often been most distressingly reduced by the latter, but was not exhausted in the slightest degree by the former; at least my mind was firm throughout, and my body was not sensibly enfeebled. Upon the whole, should I be again similarly afflicted, I should

not hesitate in again submitting to the same mode of relief, provided I could place myself in equally able hands."

The recovery from the operation was as rapid as might have been expected, from the favourable state of mind and body in which the patient was at the time he submitted to it. At the end of the second week he ceased to keep his bed; at the expiration of the third he was able to go down stairs; and at the end of the month he walked near two miles. By the end of the sixth week he was able to ride on horseback, and was in fact perfectly recovered; but the tone of the sphincter was but slowly regained, especially when walking or standing, when he found it very difficult to retain his urine.

His general health, however, was soon perfectly restored, and he began again to enjoy his usual vigour, with an uncommon flow of spirits. In this happy state he remained until about eighteen months after the operation, when he was suddenly seized with very acute pain in the region of the left kidney, which lasted for several hours, when a sharp knock at the street-door made him give a sudden start, and the pain instantly ceased. On attempting to pass his urine a moment after this, a small calculus stuck in his urethra, but was soon discharged without difficulty, and the patient was immediately restored to his usual state. In a few weeks, however, his urine became habitually tinged with blood, though, at that time, without any pain or uneasiness, and it generally looked, immediately on being discharged, like a mixture of florid blood and water; and there was no longer any appearance of dark-coloured coaguli, except in the first urine discharged in the morning. He continued nevertheless to be subject to dreadful attacks of nephritic pains, ending in the discharge of a small calculus; and one of these attacks put a sudden termination to the appearance of blood in the urine, which however returned in the course of about two months. Between the attacks of pains his recovery was complete; he was not sensible of any affection of the kidney, any farther than from an occasional sense of fulness and tenderness in that organ; and he continued perfectly free from any symptom of calculus or disease in the bladder. During the nephritic paroxysms the pain was always felt in the left kidney, except in one instance, in which the right kidney was the seat of attack, and in this case also a small calculus was discharged.

When I was first consulted on this interesting case (in 1816,) I examined the calculus extracted by the operation, which proved to be of the fusible kind, as well as all the fragments since discharged. These were of a globular shape, and were therefore neither detached from a larger mass, nor secreted on the surface

of the bladder, but proceeded, as the symptoms fully indicated, from the kidneys only.

I advised the patient to discontinue all alkaline remedies, and to substitute for them small doses of muriatic acid, a plan to which he readily assented, and which he continued to follow with great perseverance for the greatest part of that year. The acid, in the dose of from ten to fifteen drops, diluted in water, two or three times a day, agreed with his stomach perfectly well, and seemed to have the effect of diminishing the discharge of mucus considerably, though the habitual hemorrhage still continued.* But this did not hinder him from using all kinds of exercises without inconvenience. He had, however, a sharp nephritic attack in the following January, (1817) which terminated as usual, and for a short while suspended the hemorrhage. In April, of the same year, he experienced another nephritic attack; and in the following July he had a long and severe fever which lasted several weeks, and was supposed to have been brought on by some great exertion and mental fatigue, to which he was then exposed, being apparently quite unconnected with his calculous disorder.† On the third day of this fever, however, he observed, to his great surprise, that the hemorrhage had entirely left him, and from that time it has never returned. This fever did not only produce the beneficial change just mentioned, but it was followed by a long truce of the nephritic attacks, which (with the exception of the passage of a few small calculi which occasioned no pain) was not interrupted till towards the latter end of April last, when he again experienced a paroxysm which ended in the discharge of a small calculus, without however producing any return of his former hemorrhage. I am happy in being able to state that he is at this moment in perfect health and spirits.

I have only to add to this long, but I hope not uninstructive narrative, that a full trial was given in this case to the muriatic

* In describing the different appearances of the blood, the patient, in one of his letters, dated March, 1819, relates the following singular occurrence. "Perceiving," says he, "several small masses of coagulated blood in the urine, and that the urine itself was not at all tinged, I poured it off to examine the blood more narrowly, when I found that these masses were coils of blood of the thickness of a stout packthread, and upon moving them about they looked very like small red worms; and as I had passed my urine about half an hour before, without observing any such appearances, I inferred that this blood must have immediately come from the kidneys, having derived its form from the ureter."

† During this fever, and on various other occasions, the patient was attended by Dr. Maton. He was also seen once, in consultation with me, by Dr. Baillie.

acid during the year 1817, which was only interrupted by the attack of fever above related. The small calculi passed during that period, the largest of which was scarcely the size of a pea, continued to consist of phosphate of lime; but I could no longer detect any magnesia in them, and they had lost the fusible character. And it is equally remarkable, that during the year 1818, and some time after the use of the muriatic acid had been discontinued, the magnesia reappeared in the calculous fragments voided during that period.

Case of Parturition, rendered difficult by a Tumour within the Uterus, which was extirpated successfully. By Mr. James Bell, Surgeon, Forres.

[From the Edinburgh Medical and Surgical Journal, July, 1820.]

Mrs. B——, aged 32 years, healthy, of small stature, but well formed, became in labour on the evening of Friday the 23d July last. On Saturday morning, an experienced midwife was sent for, and continued in attendance. On the afternoon of Wednesday the 28th, I was desired to visit her, and had the following account of the case from the midwife: That the pains had been irregular, sometimes pretty strong and frequent, at other times weak, and at long intervals;—that she had passed urine freely, but had no alvine evacuation;—that several attempts to throw up a glyster had been made without success;—that the os uteri was fully dilated, and that the membranes had, at an early period, given way. I found my patient's pulse good, that she had no headache, sickness, or any other complaint, except what arose from the labour pains. On examination, I found the os uteri dilated; the head of the child resting on the brim of the pelvis, could be touched with the fore-finger; but at the posterior part, over the rectum, I felt what I conceived to be the apex of a fleshy tumour, projecting a little without the uterus, firm and unyielding, and interrupting free access to the child's head. Finding it impossible to alter the position of the tumour, and unable at this time to ascertain either its size, mode, or place of attachment, the labour pains also being trifling, and exerting no influence on the uterus or its contents, I determined to give an opiate and wait its effects. It suspended the pains, and procured some sound and refreshing sleep. About five o'clock on Thursday morning the pains began with some force and regularity, and the tumour advanced a little. I now endeavoured to ascertain its size and origin, and found it

filling all the back part of the uterus, (as far as I could reach,) and completely preventing the advance of the head. I tried again to push it up, but found it absolutely impracticable. Finding all my endeavours to push back the tumour, and to expedite the delivery in this way, ineffectual, I was at a loss how to act. Had I cut off the part of the tumour within my reach, even if it could have been done without risk of hemorrhage, (which, from its size, seemed likely to be profuse,) no advantage could have been gained, as the greatest part of the mass was still within the uterus. The child could not have been delivered by the feet, as it was impossible to pass a finger between the head and the tumour. The head was beyond the reach of the forceps, the application of which, even if it had been lower down, was impracticable. The lever was inadmissible. The operation of embryulcia also was, by the peculiar circumstances of the case, rendered both doubtful and dangerous. As there was no certainty of the child's death, nor as yet any other bad symptoms in the woman than those already mentioned, I determined to wait and trust a little longer to the assistance of nature. The pains, although weak, continued, with some advance of the tumour, till eleven o'clock, A. M. of the 29th; they then ceased, and did not return for some hours. About two o'clock, P. M. they again came on, and the tumour advanced. Hitherto there had been no flooding, now it came on in considerable quantity; the pains again ceased, and never returned. I now endeavoured to assist the expulsion of the tumour, by grasping that part of it within my reach, and gently pulling it from time to time. The hemorrhage ceased, and I at last succeeded in bringing the bulkiest part of the mass without the parts. I now found that it was attached by a neck; but this neck, instead of being slender, as I had hoped, was, to my great disappointment, so thick that I could scarcely grasp it. I also ascertained that the occiput lay towards the left, and the face towards the right sacroiliac synchondrosis. It still being impossible to deliver by turning, by the lever, or the forceps, and the woman having become extremely restless, and her pulse very quick, I determined to perforate the head. This, owing to my being unable to guard the perforator with my left hand, was exceedingly difficult. I at last succeeded, opened the head, took away in pieces the ossa parietalia and greatest part of the brain, introduced the crotchet, but could not draw down the head. I therefore resolved to wait some hours. She had some sleep. At three o'clock, A. M. of Friday, I brought away the child with considerable difficulty. About half an hour afterwards, the placenta, which was attached to the fundus uteri on the left side, was removed. The flooding, at first considerable, soon became moderate. I tied two ligatures

round the neck of the tumour, gave the woman an opiate and left her. Next day, I cut off all that part of the tumour below the ligatures; very little blood followed; that same night the neck came away, in a state of putridity, (as I was told,) while passing urine Of the after treatment of the patient, it is unnecessary to say much. Her bowels were opened by gentle laxatives. The fetor of the discharge was corrected, and every other attention, which the case appeared to require, was paid. Her recovery has been rapid and complete. The tumour, which was strictly steatomatous, was attached to the posterior part of the uterus, more than six inches from its mouth. Its bulky part was heart-shaped, and I am convinced it must have weighed fully six pounds.

This was Mrs. B——'s first pregnancy, and during it nothing particular occurred. She enjoyed better health than is usual in such a situation. One thing only deserves notice. She supposed herself to have gone three months beyond the usual time; and this may probably be accounted for, by her dating from the formation of the tumour, and not from the conception of the child.

Forres, 28th August, 1819.

SELECTED REVIEWS.

Exposition of the Doctrine of M. Broussais.

[From the London Medical and Physical Journal, of January, 1820.]

As we were preparing to fulfil our promise to give an exposition of the doctrine of M. Broussais respecting the disorganizations consequent on certain species of inflammation, and on phthisis and some other analogous diseases,* a work appeared, bearing a title which could not fail to engage our particular attention:

The Lectures of Dr. Broussais, on the Gastric Phlegmasiæ called idiopathic continued Fevers by Authors, and on the acute Cutaneous Phlegmasiæ.†

M. Broussais has for several years promised to develop more fully his doctrine, especially as it regards some particular diseases, than he has done in his *Examen* and the *Histoire des Phlegmasies Chroniques;* but, while this exists in expectation, two of his pupils dedicate to him his Lectures on some of the most interesting points of it, and, in patronizing the work, he might be considered as recognizing the doctrine as his own. But a perusal of these *Lectures* has led us to be confident that this can only be done in a general manner: there is so much vagueness in many parts of them; so little connected reasoning in the exposition of general principles; and, on many occasions, such imperfect accounts of what is clearly and comprehensively displayed in the writings of M. Broussais. How, then, are we to regard these Lectures? and what use are we to make of them? As the exposition of MM. de Caignou and Quemont of certain parts of the Professor's doctrine, with the imperfections, to say no more, consequent on its being derived from instruction from the chair. We shall, then, place these Lectures by our side, whilst we proceed with our own exposition, and refer to them when they speak in a particular man-

* See *London Medical and Physical Journal*, vol. xli. p. 347.

† *Leçons du Docteur Broussais, sur les Phlegmasies Gastriques, dites Fièvres continues essentielles des Auteurs, et sur les Phlegmasies Cutanées aiguës* par E. De Caignou, de Mortagne, Docteur en Médecine, &c.; et A Quemont, Docteur en Médecine, &c. 8 vo. pp. 290. à Paris, chez Méquignon-Marvis, 1819.

ner on points only treated generally in the *Examen* and *Histoire des Phlegmasies Chroniques:* always, however, taking care to designate what we derive from this source, that it may not be confounded with what we give as the doctrine of M. Broussais; and, in order that no confusion may arise, we shall place within parentheses all that is taken from MM. de Caignou and Quemont.

The nature of the varieties of organic lesion consequent on the various species of inflammatory action, will first engage our attention; and, as we have already given an account of M. Broussais' pathology of inflammation generally, we may proceed immediately to its particular application, and the history of the phenomena resulting from its existence.

M. Broussais considers that a distinction may be made between inflammation as it affects the red capillary, or sanguiferous, vessels; and that of the white, or lymphatic vessels. The former may be either more or less acute; to all the varieties of the latter he gives the generic term *sub-inflammation*; and he calls *mixed* inflammation the simultaneous irritation of the sanguiferous capillaries, and the exhalant, absorbant, and secretory, vessels. Here M. Broussais has not been happy in the choice of his expressions; if the term *sub-inflammation* can convey any precise idea, it must be that of an inferior degree of inflammation, considered absolutely; not, as he intends to signify, a relatively inferior degree of exalted action, when compared to excitement of a similar nature having its seat in other parts of the system: it would therefore have been better to have chosen some term merely designative of inflammation of the white vessels, or exhalants.

The various modifications which irritation, resulting from the impression of a stimulant of any kind, will effect on the organs, may be observed in the following states: 1°, in all the tissues, inflammation of the sanguineous vessels, carried to a high degree, determines the transformation of the part into a red mass, more or less compact, and variable in volume, according to the degree of development of which the organ is susceptible; 2°, a less intense degree of irritation, when it does not terminate by *delitescence* or resolution, transforms the cellular and parenchymatous tissues into a substance analogous to that already designated, but less red and less painful; 3°, in proportion as it extends from the epoch of the invasion of the disease, the induration or red carnification becomes more pale: it terminates by assuming a white aspect, which indicates that the non-sanguiferous vessels have contracted the irritation, whilst that of the red capillaries, which gave the impulse to the disease, has subsided; 4°, when the white vessels are irritated without any apparent previous inflammation, the tissues assume, in the first instance, either the

aspect above mentioned, or one of those about to be described; 5°, after this modification of the vitality of the white vessels has lasted for a greater or less length of time, we find united in the tumor, especially when the affected part is of very complex organization, a great number of different matters, such as white, grey, or yellow indurations, in masses more or less analogous to that which has been called schirrous, cancerous, and tuberculous, matter, with calculous or osseous concretions, in the midst of those masses; and at other times they are interspersed in a confused manner with white, yellow, greyish globules, more or less hard and friable; 6°, a period arrives at which these extraneous bodies, modified by the vital actions, become decomposed, and irritate the adjacent parts, and these become themselves the seat of inflammatory excitement, which destroys them and produces ulcers, the progress of which is often attended with considerable ravages.

Let us now proceed to the development and illustration of the foregoing propositions.

Inflammation of the sanguiferous vessels may be dissipated at the end of a certain period; and this is termed *delitescence*, or resolution. (Some evacuation or other, termed critical, is then observed, say MM. De Caignou and Quemont: sometimes abundant sweats appear, the cutaneous exhalents then assuming more activity. Sometimes there are copious evacuations of urine, with a copious deposition of a mucous sediment, forming a cloud, in the middle of that fluid. The former phenomenon is observed in phlegmonous and parenchymatous inflammations of considerable extent. The local consequences are a softening and subsidence of the tumefaction of the part, accompanied by absorption of the fluids evacuated during the inflammation; and often no sensible traces are left in the cellular tissue. These observations apply especially to delitescence. When it may be said to terminate in resolution, there are sometimes found adhesions of the cellules of the tissue above mentioned; which is also remarked after this mode of termination in serous membranes. In the mucous membranes, the exudation, in the first instance wanting, becomes serous and abundant; then more thick, and of a mucous appearance: it approaches to the nature of pus. The membrane suffers no alteration in its texture. In the parenchymatous structure, the product has a cream-like appearance. The resolution takes place in the same manner as in the mucous membranes. In the cutaneous texture, it terminates by desquamation. In the fibrous textures, it leaves a coating over the parts, that gradually disappears. It is not known how it terminates in the synovial membranes. In general, when not evacuated externally, the

product is absorbed, and then thrown out of the system by some of the excretory organs.)

2°. It may produce a too rapid sanguineous engorgement, which overpowers the vitality of the part: this is gangrene by excess of inflammation. (In the lungs, local death is manifested by a real apoplexy affecting the organs, so that their functions are suddenly suspended by the afflux of blood and the compression of the bronchial vessels, produced by this fluid. In this case, general death takes place sooner than gangrene, from the importance of those organs. This phenomenon prevents our finding, on opening the dead body, any trace of putrefaction. Gangrene of the lungs is extremely rare: it sometimes takes place, especially as a consequence of deleterious causes;* and then only one lung can be affected, the sound one supplying the functions of the other, and prolonging life sufficiently to permit it to putrify. We have observed few cases of this kind.)

3°. It may disappear, because of the organs dying from previous debility of the vessels, or from the influence of a deleterious or sedative cause, which may itself have been local irritation; this is gangrene by debility. (Gangrene from a deleterious cause, malignant pustules, and carbuncles, should be arranged with those which depend on debility, because the poison destroys the vital powers in the midst of the inflammation.)

4°. By producing suppuration; which supposes that the sanguiferous capillaries terminate on a cellular or serous tissue capable of expansion. (In this case, the irritation is not confined to the red capillaries; and the proofs of it are, (*a*) that inflammation may persist in them for a long time without producing pus; (*b*) that pus may be formed by cellular and serous tissues, without having been preceded by inflammatory symptoms. The termination of inflammation that produces pus, supposes two things: (*α*) that the part is furnished with an expansible cellular and serous tissue; (*β*) that the inflammation is communicated to this tissue in the peculiar degree which produces suppuration. The cellular tissue existing in very small proportion in the dura mater, true pus is very rare. The secreted liquid is rather transparent and gelatinous: collections of true pus are, however, found there. The product of inflammation of the *arachnoid membrane*† resem-

* The expression of MM. De Caignou and Quemont:—perhaps inspiration of some gaseous fluid is meant.

† *Meningette* is the term used by the writers of the Lectures:—we think they mean the *arachnoid* rather than the *pia-mater*. *Meningine* we translated *dura-mater*. Our translation appears to be correct only from the pathological observations applied to those terms. M. Broussais has never used them in his writings; and, if he has orally, it is but

bles that of the pleura and the peritoneum. Irritation of the sanguiferous vessels may exist without the formation of pus. In setons, suppuration is often suddenly suppressed, although the irritation and redness continue to exist. This phenomenon may be observed in all the tissues susceptible of inflammation. We may then conclude, that suppuration is only an incident in inflammation. If we see phlegmasiæ become chronic because they are kept up by the pus, there are also others found existing a long time without this cause. There are examples of persons who, for several years, have presented all the symptoms of inflammation of the viscera, in whom, on examining the dead body, not the slightest trace of pus is present, nor even the smallest appearance of suppuration.)

5°. *It may continue in a chronic character:* its effects then present a multitude of varieties, according to the texture of the part, its vitality, and the general disposition of the patient. The principal results are: (*a*) sometimes it is confined to the sanguiferous capillaries, permanent congestion in which presents the red induration, which takes different names according to the organ in which it is seated: in the skin and cellular tissue, callossity; in the mucous membranes, no particular name; in the lungs, hepatization, &c. But all the tissues do not submit themselves to this form of alteration. If the chronic inflammation is not confined to the red vessels, then, (*b*) in the cellular tissue, it will produce pus, which, if it be retained and decomposed, may itself keep up the inflammation, until the general exhaustion of the vital powers is the consequence; (*c*) in the membranes, the results will be different according to the tissues which exist in them, and the disposition of each of them to contract irritation: it may then develop phlyctenæ, herpes, dartres, indurations, ulcers, pustules, horns, tubercles, &c.: in the mucous membranes, a copious secretion of mucus, more or less resembling the pus of phlegmon; a concrete, cream-like suppuration; and the ulceration of cryptæ; in the serous membranes, an exudation of a multitude of varieties of character; (*d*) in the parenchymatous secreting organs, suppression, augmentation, or alteration, of the product of their secretion; (*e*) in all the organs, without exception, it may develop the cellular tissue, produce fasciæ of various kinds, and alter the lymphatics, so as to present all the degenerescences termed cancer, phthisis, scrofula, and fungus hæmatodes.

The alterations of structure arising from *inflammation of the*

lately that he has done so. The writers of the Lectures should have explained what they meant. This must be placed amongst the multitude of faults in their publication of the Lectures of the Professor at the Val-de-Grace.

white vessels, appear under various forms, according as different species of vessels are particularly affected. (1°. The tuberculous. The glands which present this alteration, first acquire increased size and hardness; from red they pass to dull white, then become soft, and take the consistence and colour of cream. It is seen in the glands of the bronchiæ and mesentery. The same alteration is observed in the absorbent vessels of the cellular and serous tissues. 2°. The lardaceous. It is so termed from the resemblance it has with lard. Its seat is in the cellular tissue, which it renders, as it were, infiltrated with gelatine. It is not possible to say what are the vessels which most contribute to its formation. 3°. The encephaloid or cerebriform. This is white and softish, and is observed in the cellular tissue. It nearly approaches to the tuberculous. 4°. The melanose, thus termed because of its blackish colour, does not make a distinct species from the preceding. The black colour affects indifferently all the degenerations. 5°. The cartilaginous, the osseous, and the calcary. The two former are sometimes organized, and are met with in the ossification of arteries and of the cellular tissue. The third is inorganic: it is found in the midst of the depositions of matter established in the different disorganized tissues. It is also observed in some glands. 6°. The degeneration into erectile tissue, thus termed from its analogy to that of the corpora cavernosa. It appears in the skin, in nævi materni and fungus hæmatodes. The nature of it is not well known, but it appears to appertain to the sanguiferous capillaries. It has been seen in the different viscera. 7°. The polypous, or fungous degeneration. It is a vegetation which arises from the cellular tissue. This vicious nutrition is sometimes observed with the alterations already spoken of. It contributes, perhaps, to the carcinomatous and cancerous degenerescence, which forms the highest point, and, as it were, the termination, of the disorganizations. 8°. Encysted degenerescence, and the transformation of one tissue into another, without speaking of ossifications and accidental formation of cartilage. It is thus are formed cysts endowed with hair, species of accidental mucous membranes, and that certain cysts are developed around coagula of blood, and foreign bodies present in their interior a smooth exhalant surface, analogous to that of the serous membranes.)

The many points in which M. Broussais, Dr. Baron and Mr. Langstaff, concur on this subject, will be immediately discerned. The difference between them may probably depend more in words than in ideas. In using the term inflammation, M. Broussais only means to signify a certain alteration in the action of the vessels, which he believes to be greater than the natural action, be-

cause it arises from the impression of stimulants, and it passes to what is evidently inflammation, and returns again to the former state, merely from the impression in a greater or less degree of the same causes, and with only a variation of the same general phenomena. Somewhat seems to depend, too, on the different constitution of different individuals; for we see that, from identical causes, sanguine robust subjects are affected with violent phlegmasiæ; whilst the less strong, slender, lymphatic, feebly developed subjects, have them in a less pronounced degree, and of the chronic character from the commencement. It is in the latter that irritation is tacitly communicated to the lymphatic vessels, and insensibly leads to tuberculous and other disorganization. We find also, 1°, that, whenever those disorganizations have been preceded by general irritation of the sanguiferous system, their progress is more rapid in proportion as that has been more violent. 2°. When they have not been preceded by such irritation, the cause has nevertheless always been stimulant, as is proved by their etiology; and their progress may be accelerated or retarded, by calming or rendering more powerful the action of those stimulant agents. 3°. They are always seen developed in those tissues endowed with the greatest vitality, in the periods of life when those tissues enjoy the greatest activity, and never in parts which have become affected with paralysis. M. Broussais shows, too, that there is no tissue in which the disorganizative irritation may not be developed in two different manners: 1°, with violent re-action of the sanguiferous system; 2°, without being preceded by this re-action. It is important to remark, that these affections influence other parts, according to the common laws of sympathy: as this will explain the transmission of the disease from one part to another, &c. and all the circumstances supposed to indicate the existence of a *specific virus*.

We have not terminated the exposition of the doctrine of M. Broussais: something should he said respecting ulceration in those degenerescences. Whenever the phenomena which accompany cancerous decomposition, or the ulceration of schirrous and tuberculous masses, are observed, we find, says M. Broussais, that inflammation of the sanguiferous vessels is developed, and that the progress of the disorganization thence arising is more rapid as that inflammation has been more intense. We always see simultaneous inflammation of the sanguiferous and non-sanguiferous vessels, for that constitutes the character of disorganizing and propagative inflammation; and this mixed inflammation is never developed but under the influence of either local or general excitant causes. All those substances, then, which stimulate locally, or which sympathetically exalt the actions of the nervous and sanguiferous systems, accelerate the progress of the disease.

We have not yet spoken of the influence of the local diseases above designated on the functions of other parts of the system; but, we shall now give a general summary of the phenomena which thence result.

Inflammation has a more powerful influence on the exercise of the functions in proportion to the greater degree of its energy, and *vice versa*. Thus,

1°. From *inflammation of the sanguiferous vessels of the phlegmonous character*, we observe fever, more or less general uneasiness, very severe disorder of the nervous functions, and derangement of the secretions; and, from the *progress of the disease with its prolongation into the chronic state, with suppuration, ulceration*, &c. severe hectic fever, consumption, and marasmus.

2°. From *inflammation of the sanguiferous vessels of organs but little supplied with red capillaries, or extended in membranes*, less acute fever, considerable nervous disorder, and corresponding derangement in the secretions; but all these accidents are not constant, and often some of them are present but in a very slight degree. From *its prolongation into the chronic state*, with suppuration, ulceration, &c. mild hectic fever, often hardly decisively marked; slow consumption, and marasmus proceeding but slowly; unless the inflammation occupies the organ which presides over assimilation: in this case, the extenuation is prompt, considerable, and does not depend on the fever. Dropsy may occur, especially if the hectic is but slight in degree.

3°. From *inflammation of the lymphatics*, or irritation of the white capillary vessels, no fever, no sympathetic disorder; unless when complicated with the preceding species of irritation. From *its long duration*, if the irritation of the white vessels is pure and simple, alteration of nutrition, derangement of the serous and lymphatic secretions, and dropsy. From *ulceration of the degenerescences*, if combined with a high degree of phlogosis of the sanguiferous vessels, very rapid hectic fever, and very considerable marasmus; if combined with less degree of such inflammation, the same phenomena, only less intense and less rapid in their progress and succession.

Before we proceed to M. Broussais' doctrine of other morbid affections, we shall adduce some remarks on the treatment of some of those that have already engaged our attention. It is to the organic degenerescences that we shall confine our remarks; as, apparently in a great measure from the notions that have been entertained respecting the origin of the greater part of them, they have been generally considered as incurable. Supposing them to be formed of new tissues spontaneously developed, without any previous inflammation appearing to give them birth, it has

been concluded that they are parasitic animals, as their structure also differs from the natural membranes, the appearance and increase of which have been considered equally inexplicable, and against which all the efforts of art have been supposed to be unavailing. M. Broussais vigorously attacks this despairing doctrine. We retrace our steps to adduce in detail some of his remarks on this point, which we only gave in a general manner in the foregoing exposition. After having collected and combatted the arguments of his adversaries, he establishes, "that the non-sanguiferous vessels of different orders, whether exhalents, absorbents, or secretors which are endowed, as Bichât demonstrated, with a peculiar irritability and species of vitality necessary for the exercise of their functions, are susceptible of aberrations in their properties, independently of that exaltation of action of the sanguiferous system which we qualify with the term inflammation; nevertheless that, in the most ordinary cases, this aberration is communicated to them by the inflammatory state, as all those know who have taken the trouble to trace, in a great number of instances, the origin of congestions, schirrosities, &c. This fact leads us, then, to think that, in the cases where the tumefactions are not preceded by the inflammatory state, the aberration which disorganizes them is not less the effect of an exaltation of their organic action. The causes which preside over their formation in the latter circumstances, show the propriety of this manner of regarding them; since these causes may be always reduced to either an immediate or a sympathetic excitation, which has augmented the vital action in the degenerated part at the expense of that of others. I may here repeat what I said in speaking of hæmorrhages and inflammations; which is, that these alterations, or degenerations which are developed in the non-sanguiferous vessels, are ordinarily manifested in the organs endowed with the greatest vitality: in those where the vessels in question are animated by numerous sanguiferous capillaries; in those where we find, with those conditions, a great number of nerves, much sensibility, and a close texture, which opposes itself to a free development of the phenomena of inflammation;—such are the breast, the facial region, the most firmly bound and most sensible parts of the digestive canal, the neck of the uterus, the parenchyma of the lungs, and, lastly, all parts of the body, (for the same tissues every where exist,) when a violent cause of any kind has for a long time exalted their vital properties."—*Examen*, pp. 298-300.

M. Broussais has on these principles endeavoured to prove that it is possible, if not to obtain the resolution of the tumors formed by those new tissues, at least, to prevent their formation in the greater number of cases. If, indeed, they are ordinarily the re-

sult of prolonged irritation, it is evident that, in combatting this irritation by appropriate means, we may evidently prevent the degenerescences that arise from it in the greater number of instances. When the disease is seated in external parts, emollient applications, local blood-letting, and a severely-restricted diet, are the means to be employed in their cure. The body should be made to live at its own expense, in a manner, for a certain length of time. It was by following the latter indication that GIRARDOT had such astonishing success in the treatment of scrofula. *Fames rectè ordinata, scilicet nimia et prava ciborum ingestio cautè et indesinenter prohibita*, he regards as the chief means of cure; and, he continues, *frustrà sudaverit medicus strumosam pharmacis insequendo diathesim, nisi congururenter famem foverit.* Sometimes, when inflammation of the sanguiferous vessels is not conjoined, stimulants may be employed to change the mode of irritation locally, or develop the action of sympathizing organs, and thus produce revolution. Sometimes specific stimulants are required, as that of mercury in syphilis, &c. It is said in the Lectures, that M. Broussais does not believe that any of the medicines employed with this view go directly to the organs they seem especially to affect: the latter are acted on solely by their sympathetic connection with the stomach, which produces different effects on different parts, according to their peculiar sympathetic relations to it:—Exactly the opinions of Dr. CHAPMAN, of Philadelphia.

It now remains for us to show how far the foregoing principles will explain the phenomena of some organic diseases, which, when seated in certain organs, have received peculiar names,—as phthisis, scrofula, &c.; we shall also give a general account of M. Broussais' theory of scurvy; and then we shall attend more particularly to the *Lectures*, for the purpose of illustrating some of the principles developed on former occasions respecting gastric inflammations.

PERITONEAL INFLAMMATION.

1. *Histoire des Phlegmasies, ou Inflammations Chroniques.* Par F. J. V. Broussais, M. D. &c. Chapitre iv. De L'Inflammation du Péritoine. (Vol. II.)

2. *Peritonite :—Inflammation du Péritoine.* Par M. M. Gasc.
[Dictionnaire des Sciences Medicales, Vol. XL.]

3 *Researches on the Pathology of the Intestinal Canal.* By John Abercrombie, M. D. &c &c.
[Edinburgh Medical and Surgical Journal, No. LXIII.]

4 *A practical Treatise on various Diseases of the Abdominal Viscera.* By C. R. Pemberton, M. D. &c. &c. &c. 4th Edition, revised and corrected. London, 1820.

5 *Effets de l'Inflammation sur le Péritoine, reconnus par les Ouvertures de Cadavres.* Par M. M. Montfalcon, M. D. &c. &c.
[Dict. des Sciences Med. tom. 40.]
[From the London Medico-Chirurgical Review, for Sept. 1820.]

It is in vain to look for *minute* pathological anatomy beyond the circle of the last twenty years. Candour also obliges us to confess that (with a very few honourable exceptions)* it is not in this country we need look for it at all. This statement will highly offend the national pride and prejudice of those whose researches are limited to their own case-books, and who cannot conceive that medical superiority may exist beyond an arm of the sea, or a fresh-water stream. We believe we have already exhibited proofs that our continental brethren have out-stripped us in pathology, and we shall steadily persevere in pourtraying the salutary examples of unwearied industry which they have set us, however bitter to swallow, or hard to digest, the potation may be.

No practitioner is unaware of the great importance and danger of abdominal inflammation; but even to this day, inflammations of the different tissues are too often confounded together, without due regard to their anatomical, physiological, and pathological peculiarities. How common is it to confound inflammation of

* Particularly Dr. Baillie's works.

the peritoneum with that of the organs which it covers, and to talk of isolated affections of the stomach, intestines, womb, &c. under the designations of gastritis, enteritis, hysteritis, as though the inflammation attacked, at one and the same time, the whole of the tissues composing those viscera! Yet nothing is more certain than that almost every accute inflammation of the organs abovementioned, begins in a single tissue of their structure, with corresponding symptoms, and spreads thence to other tissues, with more or less rapidity, according to the violence of the disease, and the mode of treatment, accompanied also by a train of phenomena indicative of the new structures successively invaded.

In by far the greater number of those cases termed gastritis and enteritis, the inflammation is pure peritonitis at the beginning, and the disease takes its name improperly from the organ over which the principal inflamed portion of peritoneum is spread;* though, in such instances, we rarely or never find the inflammation bounded by the limits of a single viscus, but wandering undefined over a greater or less extent of the peritoneal tunic. Every one now acknowledges that the pleura is frequently inflamed where the parenchymatous structure of the lungs escapes; and it is precisely so with the peritoneum, excepting that in the latter there is more danger than in the former. There is, indeed, a very close analogy between pleuritis and peritonitis. They begin, like all other acute diseases, with chilliness, succeeded by heat, fever, &c. They show the peculiar character of *serous* inflammations—extremely acute pain, wandering or fixed, accompanied by a distressing sense of internal heat. As in pleurisy the pain is complained of in a single point, although the whole sheet of pleura be inflamed; so, in peritonitis, the pain or tenderness is generally referred to a particular part, even when the phlogosis is very extensive.

"As cough and expectoration, (says M. Gasc) take place in pleurisy, so nausea and vomiting are common attendants on peritonitis. As pleurisy is under atmospheric influence, and sometimes appears to spread epidemically, so does peritoneal inflammation. As hydrothorax frequently results from pleuritis, so does ascites from peritoneal inflammation. Pleurisy sometimes terminates in suppuration, and produces empyema; peritonitis occasionally gives rise to a puriform effusion that almost invariably proves mortal. In pleuritic inflammation, coagulable lymph is thrown out, and adhesions are formed; in peritoneal inflammation, the intestines are often glued together by the same substance." *Dict. des Sciences Med. tom.* 40. *p.* 497.

* This observation of Broussais seems confirmed by the later writings of Dr. Abercrombie. "Inflammation of the peritoneum, says Dr. A. may occur in a more limited form than in the disease which I have now described, and, according to the seat of it, *may assume the appearance* of disease of various organs, as the bladder, the kidney, the liver," &c. 167.

After these preliminary observations, we shall proceed systematically in drawing up a synthetical article on the important disease now under review.

I. Etiology.

The *predisposing* causes of peritoneal inflammation are involved in obscurity, and may depend much on idiosyncrasy. Among these, however, have been ranged, plethora, irritable habit, abuse of inebriating liquors, ultra-excitement of the passions, cold seasons of the year, damp habitations.

The *exciting* causes are various; some are mechanical, some chemical. Thus, compression of the abdominal viscera, blows or falls on that region; in short, every contusion or general commotion of the abdomen may determine a focus of irritation, and ultimately inflammation on its peritoneal lining. Mechanical irritation also results frequently from internal friction or pressure, as of the gravid uterus, extra-uterine conceptions, enlarged ovaries, or other morbid growths within the abdomen. M. Broussais considers violent and long-continued corporeal exertions, violent and repeated contractions of the abdominal muscles in vomiting, the centripetal oscillations of the blood in the cold stages of intermittents, and strictures of the colon or rectum producing unnatural contortions and friction of the intestines on one another, as causes of peritoneal inflammation.

Among the chemical internal irritations may be placed all extravasations not quickly absorbed, as blood, bile, chyle, urine, fæces, and perhaps the morbid serous secretions of the tissue itself. But the grand causes are to be sought in the action of a cold atmosphere on the surface of the body, the application of wet or cold, especially to the feet, when the person is in a state of corporeal inaction, the neglect of changing wet clothes, the drinking of cold liquids when the body is heated, and whatever suddenly interrupts certain functions of the system, as the suppression of perspiration, the lochia, and the menstrual discharge.

Over the causes which produce epidemic dispensations of this disease, the same veil of mystery hangs, that conceals from our view the Etiology of other Epidemics. M. Broussais saw the disease epidemic, and apparently contagious among the French armies, in various parts of the continent—in Germany, Holland, and Italy. We have all seen puerperal peritonitis epidemic in our own country. The translation of rheumatic, arthritic, or erysipelatous inflammations from the joints or surface of the body to the interior tissues, is not to be overlooked by the observant practitioner, or ridiculed by the sceptical sciolist.

According to the force of the cause and the constitution of the subject, we have peritoneal inflammation of the acute or chronic form. These forms may not be very distinct, when they are passing to or from one another; but, at all other times, they are sufficiently distinguishable, and accompanied by marked peculiarities and features.

II. Symptomatology.

Acute Peritonitis is generally ushered in with horripilatio or cold chills, sometimes amounting to rigors, accompanied by malaise and weariness of the limbs. It not unfrequently happens, that this chilly stage continues for even one, two, or three days, before re-action takes place; at other times, however, this cold stage is of short duration; and heat succeeds, more or less pungent, with head-ache, constriction of the epigastric region, and frequent, hard, concentrated pulse. The face is usually pale, and often covered with cold clammy sweat; but the abdominal pains produce certain muscular contractions of the face, which give the countenance a peculiar sharpness of feature, characteristic of this disease. Sometimes there is a degree of livor of countenance; at others, it is animated with an air of agitation; or fixed, and determined. The intellectual faculties are generally performed soundly till the last, with occasional delirious wanderings, and convulsive movements of the head and limbs. To the foregoing symptoms we may add sleeplessness, thirst, a sense of stupor, with coldness of the extremities. Little can be drawn from the state of the secretory and excretory functions, which vary much, according to the intensity of the disease, and other circumstances of the patient. Such are the *general* phenomena; the *local*, or characteristic symptoms, deserve a separate consideration.

Peritonitis being declared, the abdomen becomes painful, sometimes to such a degree, that the least pressure is insupportable, and even the weight of the bed-clothes is distressing. This pain is very different from that attending dysentery, being infinitely more acute, and constant. It also differs from that attending phlogosis of any particular abdominal organ. In peritonitis the pain is sometimes fixed, and then it appears confined to a single point; at other times, it is general or wandering, according to the extent of the inflammation. The patient dare not lie in any other position than on the back, and is afraid of moving, on account of the exasperation of pain attending every motion. Both tension and swelling may now be detected in the abdomen, partly from emphysema of the subjacent cellular substance. Hiccup, nausea, and vomiting supervene, with anxiety, frequent and laborious res-

piration, especially inspiration, from the descent of the diaphragm on the abdominal viscera. There is sometimes diarrhœa, but generally constipation of the bowels.*

Such are the open forms of the disease. But the symptoms above enumerated are often modified by age, constitution, season, and other circumstances. Thus, in some subjects, of feeble powers and advanced in age, peritonitis will creep on without fever; nay, without local pain—and yet the disorder will go on to complete disorganization of the peritoneum, or such an effusion of serous fluid as gives the complaint the character of ascites. In some subjects, the thickness of the muscles and parieties of the abdomen renders the pain of pressure scarce perceptible. In such case, M. Broussais directs us to make *lateral* pressure towards the centre of the abdomen.

"Elle (pression) était plus difficile à supporter quand on la faisait latéralement, en la derigeant vers le centre. Ce signe est un des meilleurs pour faire découvrir les péritonites obscures." *Vol. II. p.* 413.

To this symptomatology of the French authors we can add little from our countryman, Dr. Abercrombie. Indeed, if the reader will compare Dr. A's description of inflammation of the peritoneal coat of the intestines, in pages 666 and 667 of the Edinburgh Journal, he will find it, in many places, almost a literal transcript from Broussais, published twelve years ago. By this, we do not mean to say that Dr. A. copied from Broussais; but we think that he ought to have extended his *researches* a little farther, and noticed the investigations of so distinguished a pathologist as M. Broussais. These remarks will apply still more forcibly to the pathology than to the symptomatology of the disease under consideration.

In some epistolary communications, which the writer of this article lately had with an esteemed friend and able physician,† there are some passages which are highly worthy of notice.

"Though we chiefly judge (says Dr. D.) of the degree of abdominal inflammation by the severity and constancy of the *pain;* yet a fatal disease may be going on, though the pain be far from acute, or only recurring at intervals. The grand criterion is the ability of bearing manual pressure; and *this* we are not to estimate solely by the complaint, but by the countenance also of the patient. Even gentle pressure causes a sudden retraction of the lips, and expression of pain, as if he were pierced by a sharp instrument. On the other hand, we are not

*"Elle arrête (says Broussais) les excretions alvines. On conçoit qu'elles sont impossibles, lorsqu'on remarque que tous les efforts pour aller à la selle ou pour uriner, ainsi que les secousses dela toux, et de l'éternument, sont insupportable." *Vol. II p.* 492.

† Dr. Dickson of Clifton.

to overrate the tenderness, (though it is the surest diagnostic) by the wincing of the patient, especially if very irritable, or young, and afraid of being hurt—or if the bowels happen to be uneasy and distended with flatus at the time.' The pulse is deceitful, and only to be regarded in conjunction with the other phenomena. Though the pain, tenderness, and other symptoms have subsided, yet this abatement is not to be relied on, so long as the pulse keeps up, particularly if the tongue does not clean, or after being so, is disposed to resume its coat; in such circumstances, there is great danger of relapse, from any dietetic indulgence, exposure to cold, or getting up too soon. Bearing the erect posture well, is certainly a proof of diminished tenderness; but the attempt should not be hazarded too early. When the pain returns at intervals, but is not of long duration, it is often difficult, particularly in young subjects, to know whether it is from unsubdued inflammatory action, or to be referred to griping colicky pains from the operation of medicine. Where we are in doubt whether pain be inflammatory or spasmodic, the safe plan is to treat it as the former. The bowels are generally obstinately closed during the first days of enteritis, with vomiting in proportion to the degree of anti-peristaltic motion, sympathy, or the extent, and spreading upwards of the inflammation. Even after free motions have been procured, constipation is very apt to recur, and the bowels are tardy and difficult to manage throughout the whole course of the disease."

This observation of Dr. Dickson accords with our own experience, and with that of all the best authors and practitioners. We cannot but regard the following sentence of Dr. Abercrombie, therefore, as tending to impress the inexperienced mind with a description which is, generally speaking, erroneous, and a principle which is exceedingly dangerous.

"We have seen (says Dr. A.) the bowels obstructed; we have seen them natural; and we have seen them spontaneously loose: and under these varying circumstances, we have found the disease going on with equal certainty, and equal rapidity, to a fatal termination."

Ed. Journal.

Those who have not seen much of peritoneal or abdominal inflammation, would naturally conclude that the above states were so nearly equal in point of occurrence, that nothing was to be thence inferred; whereas we appeal to the observation of practitioners, whether constipation is not as general a concomitant of *peritoneal* inflammation, as dysenteric purging is of inflammation of the mucous membrane of the intestines. Exceptions will occur to all general rules, of course; but really Dr. Abercrombie appears to us to have confounded in the above sentence, two very different inflammations—that of the internal and that of the external coats of the intestinal canal—requiring a very considerable modification of treatment. This error would be of less consequence, did it emanate from a weaker authority. As it stands, it is calculated to do harm; and hence our anxiety to combat it.

We may here cite the authority (no mean one by the bye) of Dr. Gregory, the present professor in Edinburgh.

"Enteritis (says he) is generally attended with costiveness; *when* the belly is open, it is a good sign." *M.S. Lectures.*

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Dr. Gregory warmly recommends laxative glysters, as superior to purgatives, by the mouth.

Dr. Pemberton's authority may be also quoted for constipation being a general attendant on enteritis.

"The bowels (says this distinguished Physician,) are obstinately costive; what is injected is returned unaltered; and what passes from the rectum unsolicited, is devoid of the ordinary smell and colour of fæces." *4th Edit. p.* 177.

The march of acute peritonitis is generally short.

"I have never (says Broussais) seen peritoneal inflammation, *accompanied by much pain and fever*, prolonged beyond the medium duration of inflammations of other serous structures—from ten to twenty days. I have remarked, that when the disease did not give way in that space of time to proper treatment, it proved fatal suddenly. I have never seen this inflammation pass from a state of violence to that of tranquillity, after going through the acute stadia, as we sometimes observe in inflammations of the chest, and of the mucous membrane of the bowels. Of the chronic cases of peritonitis which I have met, a few had pain and fever for about three or four days, at the utmost; but the majority of cases had crept on so insensibly, that no account could be obtained of the commencement of the inflammation." *Vol. ii.*

This inflammation may terminate by resolution, suppuration or effusion, gangrene, and chronic peritonitis.

Resolution. The termination by resolution generally takes place between the fifth and tenth day; sometimes the fifteenth or twentieth. It is announced by cessation of pain, fever, and other inflammatory symptoms; a re-establishment of function in the contiguous organs; a power of turning to one or both sides in bed; a disappearance of the nausea and vomiting; free evacuations from the bowels, kidnies, and skin; refreshing sleep.

Suppuration and Effusion. This is a frequent termination in fatal cases; and it is difficult to ascertain the precise period when pus or effusion is produced. There is generally a diminution of the abdominal pain, with a sense of weight and oppression; irregular chills; a softness in the pulse; paleness of the countenance; coldness of the extremities—death.

In peritoneal suppuration we have no ulceration or other breach of continuity in the membrane. The purulent matter appears to be thrown out by a kind of exhalation or secretion, as the ordinary serous fluids. The colour and consistence of the purulent

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In peritoneal suppuration we have no ulceration or other breach of continuity in the membrane. The purulent matter appears to be thrown out by a kind of exhalation or secretion, as the ordinary serous fluids. The colour and consistence of the purulent

matter are very various; being reddish, greenish, or white, like milk, with shreds of membrane, and albuminous floculi floating in it.

The internal surface of the peritoneum in health, is always secreting a serous halitus. When inflamed, the gorged state of its vessels will sometimes cause a sanguineous effusion, instances of which are related by Broussais. But more commonly, in peritoneal inflammation, there is a preternatural serous secretion, of various colours and consistencies, which accumulating in the abdomen, increases the irritation and aggravates the inflammation.

The absence of redness in the peritoneum, on dissection, is no proof that phlogosis did not exist previously; for Bichât has well observed, that death having removed all irritation from this membrane, its capillary vessels may so far shrink, in some cases, that no turgescence or redness is visible, in the same manner as erysipelas, morbilli, scarlatina, &c. disappear from the surface of the body after death.

Gangrene. Of all inflammations of *serous* membranes, peritonitis, when violent, is most disposed to run into gangrene. The phenomena indicative of this termination are sufficiently obvious. A sudden cessation of the abdominal pain; smallness of the pulse, which becomes concentrated and intermitting; prostration of strength; and facies hippocratica, announce the approach of death.

Another termination of acute peritonitis, is so important that it must occupy a considerable share of our attention.

Chronic Peritonitis. When acute inflammation of the peritoneum continues beyond the fifteenth or twentieth day, it becomes chronic; but this last form of the disease is by no means always preceded by acute peritonitis. It often steals on, from the same causes as were before enumerated, in a slow and insensible manner; especially when the patient is advanced in age, or debilitated in constitution. Particular occupations, which cause pressure on the abdomen, predispose to, if they do not excite this disease; and, in its etiology, may be ranked unhealthy localities; cold and moisture; poverty; prolonged residence in hospitals; fatigue; forced marches among the soldiery; unwholesome food acting as an irritation on the abdominal viscera; protracted intermittents; every kind of slow effusion into the cavity of the peritoneum.

Its approach is so insidious, (when it does not succeed the acute form) that we never see it at its commencement; consequently, we can only describe its early symptoms by watching the transition from the acute to the chronic forms of the disease. The patient experiences a kind of constant morbid feeling in the abdo-

men, rendered more obvious by pressure. It is the property, however, of *chronic* inflammations of the serous membranes to excite very little acute pain, "being rather acute tenderness than actual pain."—*Abercrombie.*

Baglivi, Morgagni, and others have seen the pleura, a membrane so sensible in acute pleuritis, completely disorganized, and even profoundly suppurated, in chronic inflammation, without the patient having ever complained of the least pain. It is, therefore, highly imperative on us to watch the patient after an attack of acute peritoneal inflammation, and not be thrown off our guard by the cessation of suffering. Sometimes, however, when chronic succeeds acute peritonitis, the patient complains of a fixed pain, like a stitch, at the epigastrium, which is aggravated by any sudden movements, unusual exercise, sneezing, &c.

If we examine the abdomen, a slight tumefaction, and glossiness of the surface will be perceived, especially towards evening. Dr. Pemberton observes, that the patient—

"Only complains, after fatigue, of a certain degree of tightness, and pricking soreness across the abdomen, from one os ilium to the other. This state will continue, with little variation, for many months; during which time the operations of the bowels will sometimes proceed naturally, though more commonly the patient is costive. There is no tension of the skin of the abdomen, as in the acute species: on the contrary, I have more than once observed the skin and abdominal muscles to sit loosely upon the peritoneum, which has given a sensation to the touch, as of a tight bandage underneath, over which the skin and muscles may be said (as it were) to slide. The patient always complains more of tightness than of pain; and as this tightness is much increased by any congestion in the bowels, the relief which he experiences from evacuating their contents, leads him to attribute his sensations to an habitual costiveness." *Fourth Edition, p.* 11.

The appetite is often preserved, and the digestion but little deranged, in which cases, we may conclude, that the peritoneum reflected over the stomach, is not very deeply involved in the disease. At other times, however, there is vomiting, but this is not to be considered a pathognomonic symptom of chronic peritonitis. Broussais mentions a sensation, as though a ball were rolling about in the abdomen, and sometimes approaching the throat; this he attributes to the agglutination of the intestines, which form, with the gorged mesenteric glands, a round and mobile mass in the belly, often without any effused fluid.

The general, or symptomatic phenomena of chronic peritonitis are very obscure. The pulse is natural, except towards evening, when it becomes quickened, with some augmentation of heat, a little colour on the cheeks; and some dyspnœa and cough, when

the patient lies horizontally.* These symptoms give cause to apprehend, that some effusion is going on in the abdomen, and the suspicion is strengthened by the appearance of any œdema of the ancles, and paucity of urine. Constipation of the bowels is not so common in the chronic, as in the acute peritonitis. Diarrhœa occasionally takes place towards the close of the patient's life.

The *Diagnosis* is sometimes extremely obscure in this disease. When the case is unequivocal, the prognosis is almost invariably unfavourable. In short, "when the disease has made any progress," says M. Gasc, "it is rare that we have not *tubercular depositions*, more or less abundant, in the peritoneum, and the matter of which they are formed, being little susceptible of absorption, is, in itself, ultimately, the cause of death."

"En effet, dans la maladie parvenue à ce degré, il est rare qu'il n'y ait pas, dans le tissu du péritoine, des *depots tuberculeux* plus ou moins abondans, et la matiere qui la forme, étant peu susceptible d'etre absorbée, serait, à elle seule, à la longue, une cause de mort."

Our readers will easily see, that the French authors, under Review, are describing evidently Dr. Baron's "tuberculated accretions of the serous membranes;" with this difference, that they place the disease to the account of chronic inflammation of the peritoneum—he to an hydatid origin, independent of inflammation. Time must ultimately decide between them. In the mean while it is necessary, in obedience to the good old maxim, "suum cuique," to state, that neither the French nor the English authors have the merit of originality in ascribing the origin of tubercles to hydatids. That sagacious pathologist, MORGAGNI, has distinctly insisted on this identity, in several places; but the following instances are sufficient for our purpose.

"The observations which I have very frequently made upon the tunica albuginea and vaginalis of the testis, induce me to believe, that the membraneous laminæ of the hydatids, or of the coats in which they are formed, after they have, by rupture, poured out their fluid contents, first contract themselves and their vessels into the form of a caruncle; and, unless a fresh fluid continue to flow thither, are finally so indurated, and dried up, *as to represent those white and hard tubercles of a roundish figure, some larger in their size, and some less, as the hydatids had been, with which the internal surface of the peritoneum, and the production of it over the external surface of the spleen and intestines were beset.* Postquam disruptæ hunc effuderunt, se suaque vascula in carunculæ forman primum contrahere, et nisi novus illac humor effluere pergat, indurari, et exsiccari denique sic, ut alba illa, et dura subrotunda tubercula representent alia aliis, ut hydatides fuerant,

* Dr. Pemberton says, he has not observed these evening accessions of febrile symptoms; but rather a langour, with a pallid, and doughy appearance of the face.

majora aut minorâ, qualibus in descripta virgine intima peretonei facies, ejusque productio, &c." *Epistle* 38, *Article* 35.

Again, in the same Epistle, Morgagni observes—

" Finally, read over again what I have formerly written to you,* of hard granules, or tubercles being prominent on the internal surface of the peritoneum and pleura, and you will certainly find *the series of changes that I have described.* It happened some years ago, that, in a woman who had been taken off by an ascites, the external coat of the intestine was found to be distinguished with very frequent tubercles. When I first examined them, they resembled small turgid lenticular glands; but they were without an orifice, and solid, and seemed to be made up neither of glandular, nor of a fleshy substance; but to be of a middle nature, as it were, betwixt both. I judged that I could determine on nothing more probable, in regard to them, than to suppose, that they were the *remains of ruptured hydatids contracted into themselves.* Censui nihil veri similius a me posse statui, quam si disruptarum hydatidum reliquias esse conjicerem, in se contractas, ut siccæ esse possent, et duræ."

The above, and many other passages prove, that Morgagni maintained the hydatid origin of tubercles; but this author does not assent to the doctrine of Wharton and others, that these hydatids were formed by certain " interstices of the lymphæ-ducts, for (says he) it is long ago that Ruysh admonished us of a great number of hydatids being found in the placenta uteri; sometimes, as I have also seen, and in other parts, in like manner, wherein no lymphatics are found." *Epistle* 38, *Article* 38.

If Morgagni then has anticipated our countryman, he is, at the same time, a strong authority in favour of Dr. Baron's theory.

The duration of chronic peritonitis is extremely variable—it may destroy the patient in a few months; and he may linger for years under it. Twelve years ago, M. Broussais pronounced it incurable. Since that time, however, more extensive experience has presented to this able physician many instances of recovery.

III. Morbid appearances in acute peritonitis.

The results of numerous dissections have long proved, that the peritoneum may be partially or totally inflamed, without any similar affection of the subjacent organs. In numerous instances the muscular and mucous tissues of the stomach, intestines, and other hollow viscera, were found perfectly sound, even when the peritoneal coat was gangrened. In general, the traces of inflammation are more and more strongly marked, according to the duration of the disease, and its degree of violence. Sometimes the vessels of the peritoneum are seen finely injected; at others, the redness is scarcely perceptible, owing to the reflux of blood from the capillaries, in articulo mortis.

* Epistle 16, No. 30; and Epistle 22, No. 186.

Bayle, Broussais, and others have noted the following morbid appearances after *acute* peritonitis. 1mo. Redness, thickenings, and even eschars, which penetrated to the mucous membrane of the peritoneum. 2do. Solid exudations, in form of false membranes, lining the serous surface of the peritoneum, but without organization. 3to. A liquid exudation, sometimes turbid, sometimes limpid or reddish. More or less of serous and purulent fluid was always found in the abdominal cavity, bathing the surface of the intestines. 4to. M. Broussais also found red clots, sometimes thin, sometimes thick, spread over, in form of membrane, the peritoneum, which was reddened and thickened underneath. Blood itself has been found effused from the peritoneal lining of the abdomen, without any apparent breach of vessel or substance.

In most cases, where acute peritonitis has been cured, and the patient soon afterwards died of other diseases, adhesions were found, similar to those occasioned by pleurisy.

The appearances on dissection, after *chronic* peritonitis, are very different from those above enumerated, as resulting from the acute form of the disease.

In chronic peritonitis the peritoneum acquires a greater degree of morbid thickening, and the inflammation appears to have penetrated to the different structures of the subjacent organs.

In chronic peritonitis the peritoneum acquires a greater degree of morbid thickening, and the inflammation appears to have penetrated to the different structures of the subjacent organs. The effusion is serous, limpid, or greenish, or reddish, with white, purulent-looking filaments floating about. Occasionally we find spread over the whole extent of the peritoneum, or over some of the envelopes which it lends to various organs, a crop of granulations, pisiform, white, and not unlike certain miliary eruptions of the skin. Bayle, who has examined these granulations very minutely, observes that, in a subject who presented them to a great extent, he could scrape them off very easily with the scalpel, in many places, and *there* the peritoneum underneath appeared perfectly sound. In other parts, however, they could not be raised from the membrane without tearing the latter. Broussais has also related numerous cases where the peritoneum was larded, and immensely thickened with crops of tubercles.

"I have also (says the same author) seen a species of vesicles, similar to hydatids, formed of the most limpid serum, under a transparent sheet of membrane which had been elevated thereby."

"J'ai vu des especes de vésicules, semblables á des hydatides formées par un amas de la sérosite la plus limpide, sous un feuillet transparent qu'elle avait soulevè."

Broussais observed that thin men, of a lymphatic temperament, and who had been weakened by any disease, particularly by protracted intermittents, were the most subject to these tuberculated disorganizations of the peritoneum.

The subjects opened by M. Laennec presented the following morbid appearances in the abdomen. On perforating the peritoneum a quantity of gas rushed out, which had the odour of sulfurated hydrogen.* The intestinal canal was found singularly conglomerated, and agglutinated into one mass, and partly covered by thickened and adherent epiploon. In some cases the intestines were entangled and twisted upon each other, and glued together by false membranes. The peritoneum itself was thickened, disorganized, and tuberculated, in the manner already described, with effusions of various kinds in the cavity of the abdomen.†

It is evident that these chronic disorganizations of the peritoneum, cannot long exist without affecting the structure, and consequently the functions of the various abdominal viscera. Hence the digestion, chylification, biliary secretion, &c. all become deranged, and present a complication of distressing phenomena. But not only is the disease propagated to the organs over which the peritoneum is spread—it is not seldom extended to the serous tissues of other cavities than that of the abdomen. And here we shall detail a case which will set in a very clear point of view the superiority of English *practice* in inflammatory diseases, over that of our continental brethren, notwithstanding the light which pathological anatomy has diffused over the subject in France particularly.

"*Case.* Gothard Lich, aged 25 years, a fusileer in the 2d Regt. of Hessian Infantry, was received into the hospital, at Dantzic, on the 3d of April, 1812. On the 4th he was seen by M. Gasc; his skin was very hot, with intense pain of forehead and occiput; face and eyes red; tongue white; respiration laborious; acute pain in the left side of the

* See the ingenious observations of Dr. A. B. Granville on this subject, in a paper read before the Royal Society, and partly published in Professor Brande's Journal.

† We cannot help lamenting here the exceeding barrenness of Dr. Abercrombie's *pathology* in the disease under consideration. It is given in two or three lines. "On dissection we find uniformly effusion of coagulable lymph; in some cases very extensive, and frequently effusion of a turbid or puriform fluid, sometimes in considerable quantity. Gangrene is rare." 167. The case-book of no *private* practitioner (however ample his range of practice) can furnish sufficient *pathological* details. It is in great civil or military establishments, where dissection is universal and unobstructed, that we are to find minute and comprehensive pathology. This article will exhibit so forcible an illustration of the above assertion that we shall say no more on the subject here.

thorax; constipation of bowels; urine scanty and high coloured; burning heat in the soles of the feet; pulse strong, frequent and full. The patient was robust, and had experienced a well-marked shiver the evening before, when mounting guard. M. Gasc prescribed a bleeding from the arm, with a *nitrated decoction of marsh mallows, and emulsions with some cooling powders!* (no purgative was ordered.) Besides the above means, fomentations were applied to the abdomen and chest. The patient experienced a temporary relief; but in the evening an exacerbation came on, and the night was spent in great agitation. (No repetition of bleeding was ordered to meet the rising storm of inflammation! No! one bleeding in one day was thought quite enough!)

"April 5th. Venesection was repeated, and the other medicines continued. The day and succeeding night more calm.

"6th. The fever appearing mitigated, and there being some gastric symptoms present, M. Gasc ventured on the exhibition of a little cream of tartar, which procured two or three motions.

"7th. The patient has had a bad night, with great heat and restlessness; the head painful and heavy; the eyes red and inflamed; the countenance animated; temporal arteries throbbing; tongue dry; skin arid; pulse quick and full. (Who, on this side of the Channel, would not have bled profusely from the arm or temporal artery in this state of things?) Leeches were applied to the temples, with some relief; barley ptisan, with nitre, and oily emulsions, alternating.

"8th. Restless nights; symptoms as high as ever; heat insupportable; mouth dry; stupor; alteration of the features; oppression of the chest; delirium; tension and swelling of the abdomen. *Ptisans and emulsions continued. Cold applications to the head; emollient glysters.*

9th. Delirious all last night—some remission this morning; yet the pulse is strong, frequent, and irregular, with stupor, dry tongue, and intense thirst; abdomen distended and tympanitic, with tenderness on pressure. Fomentations, nitrated decoctions; and, to please a Brunonian brother officer who was present, *camphor, æther, valerian, &c.!* Towards evening (as might easily be anticipated) an exacerbation, ushered in by a slight rigor.

"10th. Delirium still higher last night than during the preceding, and the patient was constantly putting his hands up to his head, as though that were the chief seat of the complaint; difficulty of breathing; *pulse frequent and strong.* Desisted from the Brunonian stimuli, and applied leeches to the head. The symptoms were alleviated, and the patient passed an easy day and night.

"11th. *Spontaneous* evacuations from the bowels, with relief; but towards evening all the violent symptoms returned."

We have not patience to relate the daily mismanagement of this case. Some calomel and digitalis were given, with temporary relief; but no bleeding, blistering, or purging were ever dreamt of, and this fine young man expired on the 19th, after unheard of sufferings!

"*Dissection.* Much blood in the skull; sinuses gorged; vessels of the pia mater injected; pia mater in some places inflamed, in others exhibiting traces of real suppuration; not much water in the lateral ventricles, but the fourth ventricle full of serous effusion.

"When the thorax was opened, much bloody serum rushed out;

the pleura costalis and pulmonalis of the right side glued together, with portions inflamed and suppurated. Substance of the lungs sound; but the cavity of the pericardium filled with purulent serum. The heart every where covered with a yellow membraniform exudation, two lines in thickness. The internal surface of the pericardium covered with a similar coat. The peritoneum throughout its whole extent, both where it lines the parietes of the abdomen, and is reflected over the various organs, was red, and injected with blood. The cavity of the abdomen itself contained a quantity of whitish purulent serosity, bathing the viscera and peritoneum. Liver enlarged and gorged with blood. The mucous surface of the stomach and bowels perfectly healthy."

The above case should be written in letters of gold, and hung up in every ward for acute diseases, in hospitals and infirmaries; nay, if it were placed in every medical man's study, and glanced over before he went out on his rounds, it would prove an invaluable beacon to guide him clear of Brunonian rocks and quicksands. Such effects of disease, fortunately, could not be seen in this country, where we are not such disciples of Hippocrates, and the "medicine expectante," as to hope for Jupiter to come down and drag our waggon out of the mire, while we ourselves stand by with our arms folded. An English patient told a French physician, that "in his [the Englisman's] country they treated the patients as though they were horses."* The able physician to whom this was said (our esteemed friend Dr. Ducamp) will peruse the above case, and these reflections on it: and we appeal to his judgment and candour, whether his countryman would not have acted more wisely in putting this *equestrian* discipline in force with his patient, rather than treat him as though he were composed of such machinery as would not bear the least interference of art.

We confidently hope that the free intercourse which now subsists between these islands and the continent, will mutually enrich the profession on both sides of the channel. We candidly acknowledge our inferiority in *pathology*, and shall not be ashamed to profit by the researches of our neighbours. Let them evince similar wisdom, by giving the energetic *practice* of British physicians a fair trial; and we prognosticate that their ultra-adoration of Hippocrates will diminish.

IV. Treatment of Acute Peritonitis.

Here we shall, in a great measure, abandon the writings of our foreign brethren, for very obvious reasons, and confine ourselves to our own country; nay, we shall draw the materials of this section of the article principally from our own observations and ex-

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Journ. Gen. de Med. February 1820.

thorax; constipation of bowels; urine scanty and high coloured; burning heat in the soles of the feet; pulse strong, frequent and full. The patient was robust, and had experienced a well-marked shiver the evening before, when mounting guard. M. Gasc prescribed a bleeding from the arm, with a *nitrated decoction of marsh mallows, and emulsions with some cooling powders!* (no purgative was ordered.) Besides the above means, fomentations were applied to the abdomen and chest. The patient experienced a temporary relief; but in the evening an exacerbation came on, and the night was spent in great agitation. (No repetition of bleeding was ordered to meet the rising storm of inflammation! No! one bleeding .n one day was thought quite enough!)

"April 5th. Venesection was repeated, and the other medicines continued. The day and succeeding night more calm.

"6th. The fever appearing mitigated, and there being some gastric symptoms present, M. Gasc ventured on the exhibition of a little cream of tartar, which procured two or three motions.

"7th. The patient has had a bad night, with great heat and restlessness; the head painful and heavy; the eyes red and inflamed; the countenance animated; temporal arteries throbbing; tongue dry; skin arid; pulse quick and full. (Who, on this side of the Channel, would not have bled profusely from the arm or temporal artery in this state of things?) Leeches were applied to the temples, with some relief; barley ptisan, with nitre, and oily emulsions, alternating.

"8th. Restless nights; symptoms as high as ever; heat insupportable; mouth dry; stupor; alteration of the features; oppression of the chest; delirium; tension and swelling of the abdomen. *Ptisans and emulsions continued. Cold applications to the head; emollient glysters.*

9th. Delirious all last night—some remission this morning; yet the pulse is strong, frequent, and irregular, with stupor, dry tongue, and intense thirst; abdomen distended and tympanitic, with tenderness on pressure. Fomentations, nitrated decoctions; and, to please a Brunonian brother officer who was present, *camphor, æther, valerian, &c.!* Towards evening (as might easily be anticipated) an exacerbation, ushered in by a slight rigor.

"10th. Delirium still higher last night than during the preceding, and the patient was constantly putting his hands up to his head, as though that were the chief seat of the complaint; difficulty of breathing; *pulse frequent and strong.* Desisted from the Brunonian stimuli, and applied leeches to the head. The symptoms were alleviated, and the patient passed an easy day and night.

"11th. *Spontaneous* evacuations from the bowels, with relief; but towards evening all the violent symptoms returned."

We have not patience to relate the daily mismanagement of this case. Some calomel and digitalis were given, with temporary relief; but no bleeding, blistering, or purging were ever dreamt of, and this fine young man expired on the 19th, after unheard of sufferings!

"*Dissection.* Much blood in the skull; sinuses gorged; vessels of the pia mater injected; pia mater in some places inflamed, in others exhibiting traces of real suppuration; not much water in the lateral ventricles, but the fourth ventricle full of serous effusion.

"When the thorax was opened, much bloody serum rushed out;

the pleura costalis and pulmonalis of the right side glued together, with portions inflamed and suppurated. Substance of the lungs sound; but the cavity of the pericardium filled with purulent serum. The heart every where covered with a yellow membraniform exudation, two lines in thickness. The internal surface of the pericardium covered with a similar coat. The peritoneum throughout its whole extent, both where it lines the parietes of the abdomen, and is reflected over the various organs, was red, and injected with blood. The cavity of the abdomen itself contained a quantity of whitish purulent serosity, bathing the viscera and peritoneum. Liver enlarged and gorged with blood. The mucous surface of the stomach and bowels perfectly healthy."

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perience, which are often serviceable in enabling us to judge between cabinet speculations and clinical deductions—no unimportant function of a reviewer, and in which, some medical critics of the present day evince a plentiful lack of discrimination.

We have taken various opportunities, in this Journal, of drawing the attention of our brethren to the intimate connection between the nervous and vascular systems; or, in other words, between irritation and inflammation. In peritonitis, it is particularly desirable to remove, as much as possible, every source of pain and irritation, by derobing the patient of all articles of clothing which might compress the abdomen, by enjoining quietude, by an easy position in bed, by pure and mild air of the apartment, and by the prohibition of all intrusive and useless visitations. These are necessary precautions, which are too often overlooked by the inexperienced; but which mark the practitioner of science and observation.

If, on examining the abdomen, we find local *pain on pressure*, whether general fever has been lighted up or not, we shall seldom act wrongly, by attributing that pain to inflammation, and by treating it as such. The measures pursued in the phlegmasiæ of this country are few in number, but decisive in effect. Although the efficacy of blood-letting, especially in peritonitis, is proportionate to the earliness of its employment; yet we do not see any good reason why it should not be put in force at any period or stage of the disease, *while inflammation exists*. If inflammation be on the point of terminating in gangrene or effusion, what will prevent these, if blood-letting do not? The patient may not bear the same measure of evacuation at a late as at an early stadium of the complaint, but the indications are precisely the same at both periods; viz. 1mo. To lessen the force of the heart, and the fulness of the general vascular system. 2d. To relieve the vessels of the particular part inflamed, of their overplus of blood and irritation. General and local bleedings are the grand means of effecting these objects; but they are not the sole means.

As we know that peritoneal inflammation may be going on insidiously, without much affection of the general system, we ought rarely to commence in any other way than by venesection; and that carried to the extent of relieving local pain, or inducing syncope, or a strong tendency to it. Where the symptoms are previously equivocal, this measure very often gives a fuller development to the nature of the disease, and seldom, indeed, can any danger be apprehended from it, even where it may not have been essentially necessary. The second measure is *local* detraction of blood, by means of leeches applied in considerable numbers over the abdomen, and, if prejudice will permit, to the hæmorrhoidal

or vaginal vessels. It is at the moment that the first ease is experienced from general and local bleeding, that the mucous membrane of the intestinal canal is to be excited to copious secretion and complete detrusion of its contents. Here then we differ, *toto cœlo*, from Dr. Abercrombie.

"We have seen no reason (says he) to suppose that the retention of fæculent matter was injurious in the one case, or that the copious evacuation of it was productive of the slightest benefit in the other. On the contrary, there are facts which must lead to a suspicion that the action of purgative medicine upon the intestinal canal, when it is in a state of inflammation, rather tends to increase than diminish the disease."*

Were we called to a man with a fixed pain in the abdomen, constipation of the bowels, gastric irritability, fever, and other symptoms indicative of enteritic inflammation, and *then* prescribe purgative medicines without the preliminary and preparatory measures of general and local detraction of blood, we should expect the results which Dr. Abercrombie alludes to. But surely, this is a very insulated or oblique view of the subject. For what reason do we employ active purgation in the stages of *thoracic* inflammation? To lessen the whole mass of circulating fluids, and reduce the general action of the heart and vascular system. That purgation does this, we appeal to clinical experience. Now, in abdominal inflammation, provided the *mucous* tissues are not inflamed, purgative medicines excite the secreting vessels, not only of the whole internal surface of the intestines themselves, but of the glandular organs whose excretory ducts open into the primæ viæ, and thus powerfully deplete *locally*, the vascular system of the abdominal viscera.

When that portion of peritoneum reflected over the intestines is inflamed, but where the villous coat is unaffected, we hesitate not to assert, from personal experience, that constipation of the bowels will, in nine cases out of ten, be a feature of the disease; and in such cases, we maintain, that to excite the natural action of the mucous membrane, immediately after proper vascular depletion, is a powerful mean of checking the said peritoneal inflammation; in the same way that a free expectoration from the mucous membrane of the lungs relieves the vascular turgescence and inflammation of the parenchymatous structure or pleural covering of the same organ, as every practitioner must have repeatedly remarked. And here we appeal to the experience of our professional brethren, whether they have observed that patients generally complain of aggravation of the symptoms after the operation of purgative medicines, as Dr. A. states? For our own parts, we

* Edinburgh Journal, April 1820, p. 179.

have generally observed the reverse of this take place, when purgation was effected in the manner, and with the preparation above described.

Dr. Parr, the able author of the London Medical Dictionary, after thirty years' experience, states, that in enteritis

"The salutary termination is by a discharge of fæces. If this can be obtained, the patient is safe; but unless free, copious, and truly fæculent stools are procured, the most promising appearances, in every other respect, will deceive." *Dict. in verbo inflam. intest.*

It must also be remembered, that inflammation of the peritoneal and muscular coats of the intestines has a natural tendency to produce spasmodic contractions of their calibre, and thus lock up whatever fæcal matters may be contained in the bowels, giving additional cause of irritation. The reduction of this spasmodic contraction by blood-letting, warm fomentations, glysters, or even narcotics, and the subsequent action of purgatives, all tend to relieve pain and check inflammation, as we have seen in numerous instances.

Dr. Abercrombie is neither singular nor original in his anti-purgative doctrines in peritoneal inflammations. Broussais thinks purgatives are only proper towards the close of the acute stage, "because the vermicular contractions which they excite in the intestines, must increase the morbid sensibility of the peritoneum." But knowing the inertness of the vascular depletion among our continental brethren, we cannot attach much importance to their therapeutical precautions. Broussais admits the propriety of gentle anodynes, when the force of the reaction is a little subsided.

The success which has attended the administration of oil of turpentine in puerperal peritonitis, first recommended, we believe, by Dr. Brennan of Dublin, is a proof of the power of purgatives in this disease. The turpentine is not only a potent cathartic, but excites powerfully the whole mucous membrane of the intestines, and thus derives the morbid irritation from the peritoneal tunic to a secreting surface, where it is carried off by the increase of secretion itself. Oil of turpentine and castor oil form a very useful combination for exhibition in this disease.

By these observations in favour of purgative medicines, in acute peritonitis, we do not mean to lessen the absolute necessity for decisive vascular depletion, general and local, previously to their administration. On the contrary, we urge the propriety and priority of these means, recommending the use of purgatives as an auxiliary measure. Our usual practice, indeed in this dangerous disease, is, first, to order general blood-letting till the pain is relieved, on pressure, or syncope produced; and while the local de-

traction of blood, by numerous leeches, is going forward, we order a grain or two of opium, or six or eight of extr. hyoscyami, combined with five or ten of calomel, and six or eight of ex. col. comp. to be taken. After the local bleeding, and a couple of hours after the above medicine has been swallowed, we endeavour to set the bowels in action, either by neutral salts, castor oil, or laxative injections. Reiterated observation has proved to us the utility of combining an anodyne with the first cathartic, and especially with the calomel, as it tends to prevent or allay gastric irritability, intestinal spasm, and irritation, thereby insuring a more copious fæcal evacuation afterwards, than would otherwise be procured.

We observe in Dr. Gregory's MS. Lectures, the following passage, which is sufficiently in point.

"Small doses of the sal. glauberi are better than the common purgatives; but as salts seldom sit easy on the stomach in this inflammation, it is necessary to join an opiate, *which does not stop the operation of the purgative, as one would imagine*, but only keeps the patient from vomiting." *MS. Lect.*

Dr. Pemberton's sentiments respecting purgatives in enteritis, general and local blood-letting being premised, are as follow:

"If the stomach will bear liquids of any sort, a strong solution of magnes. sulph. in aq. menth. pip. with an addition of tinct. sennæ, may be directed in such quantities, and at such intervals, as the sickness of the stomach will allow. If, however, all liquids are rejected, we may direct an usual dose of calomel, in union with the ex. col. comp. every six hours, ad quartam vicem. In the intermediate hours, an injection of water-gruel, with common salt, may be employed. Purgatives are to be continued during the whole progress of the disease. *Fourth Edit. p.* 181.

It is very strange that this able and experienced physician should not have noticed what Dr. Abercrombie considers as a common occurrence in enteritis—a natural state of the bowels, and aggravation of the complaint by purgatives. We believe, however, that Dr. Pemberton is not very singular in this respect. Dr. Abercrombie appears to be fast falling into the error of converting exceptions into general rules.

We agree with Dr. Abercrombie, that the first blood-letting should be as early as possible, and carried the length of making a decided impression on the system; and also that, to prevent this advantage being lost, we should repeat the depletion, after a short interval, whenever the effect of the preceding one has subsided. If the venesection be thus *timeously* repeated, it will seldom require a large detraction to check the pain and inflammation; whereas, if the disease be allowed to acquire force in the intervals of depletion, it will not only require a large loss of blood, but that large loss itself will have less chance of bri-

dling the inflammation than the timely small one, while it seriously reduces the vital energy of the patient. And this is an additional reason for keeping up a secreting action on the mucous membrane of the bowels, which saves the detraction of pounds of blood.

Dr. Abercrombie wisely cautions the practitioner not to lose sight of a patient with an inflamed vital organ more than an hour or two at a time, until the force of the disease be decidedly broken. Unless the violence of an internal inflammation be signally mitigated within the first twenty-four hours of active treatment, the eventual result will be very doubtful.

Dr. Abercrombie, and indeed the practitioners of this country in general, employ local blood-letting in abdominal inflammation with too sparing a hand. Not only should leeches, in great numbers, be applied over the abdomen, but to the anal and vaginal regions, the bites being encouraged to bleed as long as possible, by warm fomentations.*

If conveniences are at hand, the warm bath should succeed general and local blood-letting, not only as a means of equalizing the circulation, but of lessening pain, and promoting the effect of the purgatives. If the warm bath cannot be procured, reiterated fomentations, with decoction of poppy heads, chamomile flowers, and a proportion of spirit, should be applied to the abdomen, which will not interfere with the bleeding from the leech-bites. Broussais recommends, in addition to the tepid bath and fomentations, gentle friction over the limbs, with the hand or some other body supple and agreeable to the touch.†

After the violence of the inflammatory action is subdued by general and local blood-letting, laxatives, and fomentations, or

* An able friend of ours, in the case of a very delicate female child, seven and a half years old, had lately fifty-five leeches applied to the abdomen in the course of a very few days. The pulse, before the leeches were applied, could hardly be counted. After the first application of fifteen leeches, it fell to 140, with frequent intermissions, both then and subsequently. When the violence of the disease was broken, the pulse remained five days, viz. from the sixth till the eleventh of April, stationary at 112. At this time, an ounce of castor oil produced several motions, in which were some olive-coloured lumps that appeared to have been long retained. The pulse now fell below 100, for the first time since her illness, "evidently showing (says he) how important a free state of the bowels is; for the pulse has risen or fallen, according as the bowels were confined or free."

† Dr. Hall, of Berwick, in a letter to Dr. Dickson, of Clifton, on the subject of peritoneal inflammation, observes, "in all active inflammations of this kind, the suddenly emptying the blood-vessels, generally affords such relief at first, as to give time for topical applications being afterwards made with advantage. I have found benefit from small

the warm bath—*blisters* are important auxiliaries. Broussais recommends the first blisters to be applied to the thighs or legs, in order to keep the surface of the abdomen clear for leeches and fomentations; but when the acute stage is declining, or if the other measures seem to fail, then we are to cover the abdomen with a blister. We ourselves have not hesitated to blister the abdomen, as soon as a decided impression was made on the disease, by the other and more essential measures. Leeches, if subsequently necessary, may be applied, with great advantage, to the flanks of the abdomen, and to the anus.

Of the cold applications recommended by Dr. Abercrombie, Dr. Kinglake, and several French writers, we have not any experience.

"In a considerable number of cases (says Dr. A.) I have used, with evident advantage, the application of cold, by covering the abdomen with cloths wet in cold water or iced water, or by pounding ice in a large bladder."

The authorities for tobacco injection, in inflammation of the bowels and ileus, are exceedingly numerous, as the reader will perceive, by looking into Plouquet, (vol. v. p. 117) where, among others, De Haen and Fowler have recommended the measure. Without much experience in this remedy ourselves, we are disposed to unite with Dr. Abercrombie, in proposing to revive its use as a powerful auxiliary in the disease under consideration.

"The great advantage (says Dr. A.) attending the use of it in enteritis is, that while it tends to move the bowels, and keep them free from distention, it is, at the same time, powerfully calculated [he ought to have said, "calculated powerfully"] to allay vascular action, and may thus assist in keeping down the inflammation."

Mr. Howship, in his late work, mentions his having seen three cases, "in which the patients had suffered extreme pain in the region of the bowels, and in which the prescriptions of physicians had availed nothing. Mr. Heaviside being consulted, and finding

doses of ipecacuanha joined with calomel, where the alvine discharge is slow, provided the stomach is not in an irritable state; in which case, the addition of ol. ricini to a common enema, often answers the best purpose."

Dr. Dickson himself, in a letter to the writer of this article, observes, "I think it of the highest import, towards conducting the disease to a safe termination, to keep the bowels freely open by mild means, and by frequent injections; for I have repeatedly remarked the pulse to fall after a copious motion." He justly advises, of course, that the force of the inflammation be previously broken by decisive blood-letting, as we have already inculcated.

Dr. Pemberton, in his valuable work, states, "it is necessary that the bowels should be kept *constantly* open." He recommends castor oil or neutral salts.

that the stomach had rejected every thing taken, and that stimulating glysters produced no favourable effect, in despite of bleeding, warm bath, and almost every other means, desired Mr. Howship to try the fume of tobacco, injected cautiously, by the proper apparatus. A general commotion and rumbling noise in the bowels took place in all these cases, and were soon followed by copious evacuations of fæcal matter. The patients were saved."—*Practical Observations, &c. p.* 19.

Of the sedative effects of antimony on the vascular system, we dare not avail ourselves in abdominal inflammations, on account of the gastric irritability; but Dr. Abercrombie recommends the free use of digitalis; in cases where the pulse continues frequent after the local symptoms appear considerably subdued by bleeding, and consequently where there is danger of relapse.

A tympanitic state of the abdomen is certainly a formidable symptom in enteritis, and a very unfavourable omen. We have seen it, however, owing to a sudden extrication of gaseous fluid within the intestines, and removed by aromatics, friction, and assafœtida injections. Dr. Abercrombie has seen injections, with large quantities of cinchona, very useful.

There is a period, in some cases of abdominal inflammation, where the disease is just subdued, but where there is a kind of balance between recovery and gangrene. The pain will vanish, the pulse become weak, the vital powers appear to sink, and a coldness overspread the body. These symptoms are too often indicative of mortification; but every experienced practitioner must have occasionally witnessed cases of recovery, even from this alarming state. Here we must give wine; for if gangrene *have* commenced, no harm can ensue from the remedy; and if it have *not* commenced, the wine may happen to give a salutary stimulus to the nervous and vascular systems, when stagnation is on the point of taking place in the vital fluid, and where farther evacuations would be instant death. In some cases of this kind, however, the symptoms are so equivocal, as to render it exceedingly difficult to determine on the proper course to pursue.

"A lady, (says Dr. Abercrombie,) aged about 35, on the seventh day after delivery, was seized with violent pain over the whole abdomen, most severe across the stomach and towards the right side; much tenderness on pressure; urgent vomiting; great restlessness; respiration short and oppressed; pulse 140, and sharp. The pain was aggravated by inspiration, and by every motion of the body. She was bled and blistered, and took laxative medicine, which operated freely. After the bleeding she was very much relieved; could breathe without uneasiness; the vomiting subsided, and the pulse was much diminished in frequency: this was in the night. On the following day the pulse rose to 150; the breathing was quick, short, and oppressed; some vo-

miting; countenance anxious; there was neither pain nor tenderness of the abdomen, which was to the feel soft and natural; lochia natural. Wine was given in the quantity of a small glass every hour, and injections of beef tea, each containing ℥ ß of bark in powder, and sixty drops of laudanum. These were repeated as often as they were discharged, which was generally from one to two hours. After some hours the symptoms were improved. Next day the pulse was from 125 to 130; on the third day from 112 to 120. Thus she gradually recovered, having continued to take a bottle of wine in each twenty-four hours." *Ed. Journal, April*, 1820.

It is hardly necessary for us to observe, that the strictest antiplogistic regimen is essential throughout acute peritoneal inflammation. Saline draughts, in a state of effervescence, will be useful in allaying thirst and gastric irritability—and when food is necessary, the farinaceæ should long precede animal food, or any other kind of ingestion which produces much fœcal remains. Rice water for drink is very useful in convalescence, as it is nutritious but not stimulant; and as this disease leaves a strong tendency to relapse, the patient should be enjoined the strictest attention to abstemiousness, regular bowels, warm feet, and flannel next the skin, for a long time after every symptom has disappeared.

Treatment of Chronic Peritonitis. In the first edition of M. Broussais' work, he appears to consider chronic peritonitis as incurable; and M. Gasc, the writer of the article peritonitis, in the Dictionnaire des Sciences Médicales, gives a similar prognosis—"on peut dire que la péritonite chronique est presque toujours mortelle." Within the last twelve or fourteen years, however, M. Broussais has met with several cases of this disease which terminated favourably. He justly observes, nevertheless, that in many instances, chronic peritonitis is supposed to be cured when the disease is merely dormant for a time, and pretty sure to advance again with hasty strides. M. Broussais gives a satisfactory explanation of the general incurability of the disease; namely, that tuberculous and pultaceous matter is commonly deposited, during chronic inflammation of the peritoneum, between the layers of this membrane, or in the substance of the false membranes thrown out on its internal surface, which depositions appear to be incapable of absorption; and consequently, keeps up an irritation which feeds the disease. This tuberculous matter may, for a time, lie dormant, or create little inconvenience: but ultimately, it kindles up irritation and inflammation. It is difficult, however, to know the exact period when these extraneous matters are deposited, and therefore we should not be too abrupt in giving an unfavourable prognosis. M. Broussais thinks, that a patient's fate, in general, depends on the treatment during the first twenty or thirty days of the disease, though he does not deny that it is

curable at a much later period. Indeed, where chronic peritonitis steals on, without having been preceded by the acute form, it is seldom we see the complaint during the period above mentioned.

In respect to the treatment, our first object is to ascertain if there be any remains of the acute or sub-acute forms of the inflammation; for in that case we must still employ a modification of remedies already described. And, indeed, where no acute peritonitis has preceded, we are to be ever on the watch for a supervention of such a state; and ready to combat it by active means.

Our next object is to lessen or soothe irritation and pain, which aggravate the disease and accelerate its march. The food should be of the very lightest kind, so as that but few fæces may be formed, and those should be daily carried off by the gentlest means, particularly by laxative glysters. It is evident that when coagulable lymph has been thrown out, and adhesions have taken place between the intestines themselves, or between them and any other parts, the action of purgatives must be productive of serious mischief. The case is here totally different from acute inflammation of the peritoneum, and before any disorganizations have taken place.

In this chronic or apyrectic peritonitis, we must endeavour to arrest the morbid process going forward internally, through the medium of the skin. The tepid bath fomentations, stimulating frictions, blisters, or even issues, should be successively employed, with or without leeches, according to the activity or inactivity of the internal inflammation.

As a serous effusion is a common consequence of this dangerous disease, and is ever to be dreaded, *diuretics* are important remedies, particularly the digitalis, united with some gentle saline aperient, as the acetate of potass, or soda tartarizata.

The following will be found a very powerful diuretic in many cases besides that immediately under consideration.

R. Acidi tartarici . . . . . ℈j.
Sodæ carb. . . . . gr. xxiv.
Infusi digitalis . . . . . fl. ℥ß.
Spir. ætheris nitrici . . fl. ℥j.
Tinct. scillæ . . . . . ɱ. iv.
Aquæ menthæ . . . . . ℥ij. M. ft.

Haustus bis terve in die sumendus.

Broussais strongly recommends the introduction of diuretic medicines, as the tinct. lyttæ, and tinct. scillæ, by means of friction on the skin, aided by gentle laxatives internally. It is need-

less to observe, that the most perfect quietude is necessary in this complaint; perhaps, however, a sea voyage, from its known effects on the absorbent system, and a change to a warm climate, might be useful here. Anodynes must be exhibited; but they should be such as produce the least constipation, as hyoscyamus, conium, &c. If opium be used, it must be combined with laxatives. Without asserting that the disease under consideration is *identical* with what Dr. Baron has described, under the term "tuberculated accretions of the serous membranes," in his valuable work on that subject, we may at least be permitted to consider the two affections as very *analogous*; and under this idea, the plan of exciting to absorption by nauseating medicines, as recommended by the illustrious Dr. Jenner, in the work alluded to,* is highly deserving of a trial, in so intractable a disease. There can be little doubt, indeed, that the absorbents might be made to act upon many extraneous and morbid growths in the human body, by *rigid abstinence* alone, if patients had fortitude to persevere in the measure. For our own parts, we should place more confidence in this than in any other remedy; and practitioners should at all times bear in mind, that without strict abstemiousness, there is little hope of a cure in chronic peritonitis.

We shall now introduce a few exampless of the acute and chronic forms of the disease under review, from M. Broussais, which will afford ample food for reflection to our readers, and give us an opportunity of making some incidental remarks of our own.

Case. Acute Peritonitis simulating low Fever.

"A man, 26 years of age, large stature and robust, entered the hospital of Medenblick on the 4th fructidor, with an air of great suffering, livor of countenance, sharpness of the features, parched tongue, delirium, constant jactitation. He complained of nothing; but the abdomen was tender on pressure, pulse quick, depressed, and feeble. These being the features of low (ataxique) fever in the last degree, *I could only prescribe tonics and antispasmodics* for the night.

"Next day, (10th of the disease) about one o'clock, the abdomen became intolerably painful, and the patient could not bear the slightest pressure without making great complaint. *A lavement, emollient fomentations.* No relief. The patient got into a convulsive agitation, uttering piercing cries. The warm bath for three quarters of an hour, in which time several spoonfuls of an antispasmodic potion with laudanum and ether. After coming out of the bath he was easy and tranquil, the pulse fuller, and the skin soft. He could now give some account of his complaint. In the vessel on which he embarked at the Texel, he became affected with some gastric symptoms, followed by nausea, cold chills, and malaise. A vomit was given him, during the operation of which, he first felt the pain in the abdomen, which had never since ceased. I now perceived that the disease was peritonitis,

* See also our *Quarterly Series*, No. 6, for October 1819

and prescribed *leeches*,* *fomentations* and *diluents*. The evening was calm, and only a little sensibility on pressure of the abdomen remained.

"Next day, (11th of the disease) the abdominal pains renewed, with restlessness. *Fomentations*. The warm bath was attempted, but the pain was so great that he could not be put into it. Constant tossing about during the remainder of the evening, with exquisite tenderness of the abdomen. I was deterred from leeching the abdomen, by the sinking of the countenance, and weakness of the pulse: indeed, I judged that the process of disorganization had commenced. *Anodynes* were prescribed with the view of alleviating his sufferings, but he could swallow nothing. The blisters which were applied to his thighs produced no effect.

"The day following all was calm, and he said he was 'very well:' but he died in the evening.

"*Dissection*. Corpse extremely muscular. Vessels of the head a little injected, with some serous effusion. Peritoneum red, covered with sanguiferous vessels, and thickened to a line or a line and a half, particularly over the intestinum ileum, where there were several black spots. The peritoneal covering of the mesentery, omentum, and ileum, was coated with a solid exudation of a whitish yellow colour, strongly adherent. The muscular and mucous coats of the intestines sound."

M. Broussais observes, that at the period when this patient arrived under his care, no measures would probably have saved him. We do not agree with him. We are sure that the *symptoms* authorized *general* blood-letting as well as local; together with intestinal evacuations; and we are disposed to think, that under the energetic treatment of this country, the patient might have been saved. At all events, the methodus medendi was here as bad as it possibly could be, and dissection evinced the inefficacy of nature, or the "medicine expectante," in counteracting peritoneal inflammation.

We agree with M. Broussais, indeed, that in the above case, the emetic was injudicious, nay injurious; and well may our author exclaim, "Si les nausées qui décidèrent l'emploi du vomitif dépendaient d'un principe de péritonite, combien le malade est à plaindre qu'on n'ait pas su les interpreter!" *Vol. II. p.* 408.

The following case is well worthy of every practitioner's attention.

Case. Acute Peritonitis simulating Spasmodic Colic.

"Bongeot, ætat. 39, robust and athletic, entered the hospital of Udina, the 7th of August 1807, for the treatment of violent colic, with which he had been tormented during nine preceding days. He had a dull but constant pain in the abdomen, exasperated every night, and for which he had taken, without relief, spices, wine, lavements, and various stimulants. He was affected frequently, during the above period, with vomiting, and the constipation was invincible.

"He had now a countenance indicative of suffering, a flush on the face, contracted pulse, no way frequent, and rather feeble than strong, with little heat of skin, no abdominal distention, and but little tenderness on pressure. I prescribed 'la solution Gommeuse acidulée et des juleps anodyns,' with some amelioration of the symptoms.

* It is *bleeding* (*la saignée*,) in the original Am. Ed.

8th. This day passed with some little malaise, a sense of painful fulness in the belly, and no appetite. Same treatment.

9th. The obstinacy of the constipation appeared to demand some evacuants. Tamarind decoction. Great increase of pain, and restlessness, but no fever. *No medecine, but mucilaginous drink.*

The complaint went on gradually increasing for some days, with a developement of fever, and at length M. Broussais opened his eyes, and saw that he had peritonitis to deal with! *Fomentations, six leeches to the margin of the anus.* Great reduction of the symptoms, and tranquil night. But the next morning brought a renewal of all the symptoms, with fixed and constant pain in the abdomen, which was increased every night to horrible tortures. Emollients; repetition of the leeches to the anus and lower part of the belly. In short, he dragged out a wretched existence till the 19th of August, without the least *active* measure being taken by M. Broussais, the most *active* and energetic physician in all France!

"*Dissection.* The corpse very fleshy and muscular; all the muscles in a state of rigid contraction. Chest sound, *peritoneum* red, and thickened throughout its whole extent, and covered, in some places, with a whitish exudation. There was a small quantity of serous effusion in the abdomen. The mucous membrane of the *stomach* appeared red: but that of the intestines was perfectly healthy." 412.

It is really too bad to hear M. Broussais throw the blame here upon the *tamarind decoction!* "on la voit, d'abord obscure s'accroître prodigieusement *par l'effet d'un purgative.*" (*!*) M. Broussais even outsrips Dr. Abercrombie in his condemnation of purgatives in peritoneal inflammation. "Les purgatifs seraient presque aussi pernicieux que les vomitifs, dans cette maladie." But we beg Dr. Broussais' pardon when we say, (and indeed without taking much credit to ourselves) that we would have saved Bongeot's life, by bleeding and *purging*. These cases, however, are invaluable to the profession. They teach us what may be *done*, by exhibiting what has been left *undone*.

The above case is valuable in another point of view. It proves to us that acute inflammation of the peritoneum may exist in a very high degree, and accompanied by great pain, without any febrile movement in the general vascular system.

M. Broussais here relates an interesting case of what he denominates "accute hæmorrhagic peritonitis." A soldier 28 years of age, athletic, and a great eater, had, for some time, been subject to attacks of pulmonic inflammation, with slight hæmoptyses. About the middle of September, 1800, he became affected with some general febrile symptoms, for which the surgeon of the place prescribed an emetic, as he considered it "la fièvre du pays." During the operation of the medicine, the patient ex-

perienced a very violent and deep-seated pain in the left hypochondre, after which the fever became strongly developed.—On the 17th he took a purgative, and on the 18th was calm, and sent to the hospital of Udina; where, being seen in the evening by a physician, he appeared in such a state of debility and exhaustion, that antispasmodics and light nourishment were ordered.—19th. A deceitful calm; weakness; cold chills.—20th. Calm in the forenoon; but towards evening, violent fever, great anxiety, severe pain in the side, spreading all over the abdomen, respiration laborious, cold sweats. Death in the night.

"*Dissection.* Nothing remarkable in the head or thorax. The cavity of the peritoneum filled with clots of blood, which were spread in sheets over the principal viscera. Spleen vastly distended with blood. On a more accurate investigation, the cellular tissues beneath the peritoneum, and between its duplicatures, were black, and injected with blood."

Case of Chronic Peritonitis.

"A young soldier entered the hospital at Nimeguen for an affection of the testicle. Some time after his arrival he experienced a gastric affection, which induced the surgeon to order him an emetic; during the operation of which he felt pains in the abdomen, that continued in spite of various sedatives. To these were added, vomiting, dysury, and fever; on which account he was turned over to the physician's wards, where M. Broussais found him, two months after the commencement of the complaint.

"He was now wasted, pale, and affected with cough, unaccompanied by expectoration. The abdomen was distended, and painful to the touch; the patient also experienced constant cutting pains in the belly. Vomiting of every thing taken, and aggravation of all the symptoms after eating any thing of an irritating nature; difficulty of making water; pulse frequent, hard, and contracted; exacerbation of heat, fever, and pains in the evening. M. Broussais pronounced the disease to be incurable, and merely prescribed diluent and anodyne drinks. He died about three week afterwards, in an advanced stage of marasmus.

"*Dissection.* Some adhesions in the chest; but the substance of the lungs sound. The abdomen contained a considerable quantity of milky serum. The peritoneum was red, granulated, and, in many places, four lines in thickness. Over its surface were scattered small fragments of a whitish exudation, unorganized, and, in a great measure, dissolved in the abdominal effusion. The liver was enlarged, and resembled granite when cut into, interspersed with tubercles. The mucous membrane of the intestinal canal and stomach perfectly sound." *Vol. ii. p.* 435.

The following case will shew us, that chronic peritonitis may be going on for some time without much derangement of function in the digestive organs.

"*Case.* Nomin, a soldier, 27 years of age, formerly stout and muscular, entered the hospital of Udina, on the 23d of January, 1807, in a

state of advanced marasmus, with pain and tumefaction of the abdomen; which, together with the whole surface of the chest, was morbidly sensible to the touch. Face expressive of great sufferings; constant cough, with expectoration; pulse frequent, sharp, and not strong. He stated, that four months previously, he had been attacked by a quotidian ague, during the first eight days of which he became much swelled about the body, which he attributed to the quantity of water he had drunk in the hot fits. He was treated at the hospital of Treviso by a continued exhibition of bitter wine; and at the expiration of two months and three days, he was discharged, apparently cured. But a fortnight after he left the hospital, he became affected with a pain in the side, about the region of the spleen, accompanied by a diarrhœa. This diarrhœa continued obstinate, with fever, emaciation, and cough; and in about a fortnight from this relapse he died.

"*Dissection.* The pleura pulmonalis and p. cost. slightly adherent by means of a whitish unorganized exudation, and about a pint of serous effusion in the left cavity of the chest. Parenchymatous structure of the lungs sound. The peritoneum a little thickened, and lined throughout with the gelatino-albuminous exudation above-described in the thorax. The whole of the abdominal viscera, without exception, were covered with this production, which served to glue them slightly together. No serous effusion. The mucous membrane of the stomach was a little red, and some reddish patches were observable on the mucous surface of the small intestines, and also of the colon, but without any ulceration." 437.

In the following case, we imagine, Dr. Baron will recognize an instance of the disease on which he has lately written. It presents also a complication of peritoneal inflammation, with phlogosis of the mucous membrane of the intestines.

"Pierrott, 22 years of age, perceived, about the middle of July 1806, a swelling of the abdomen, succeeded by much flatulence, and by diarrhœa, together with pain. These continued a month, when he was obliged to quit duty and enter the hospital of Udina, where he had twenty or thirty stools per diem. The diarrhœa was mitigated for a short time by ipecacuan; but it returned again, and now the patient came under the care of M. Broussais. The patient, at this time, had frequency of pulse, heat, diarrhœa with tenesmus, obscure but permanent pains in the abdomen, with flatulent distension, tenderness on pressure, in the line of the ascending colon. Rice water, demulcents, &c. with anodynes, and rigidly low diet. By these means the diarrhœa was checked, and the febrile heat reduced in a month; but whenever the nourishment was increased, or tonics given to recruit the strength, then the fever, bowel complaint, and pains of the abdomen returned. The low regimen was therefore again persisted in for six weeks longer; but in spite of all this, there continued a dull pain in the abdomen, especially when *lateral* pressure was applied; and the abdomen was evidently more protuberant than it ought to be. Tired of the hospital, he was sent to his corps (exempted from duty) from the 15th of November till the 5th of January, when he returned to M. Broussais in a state of advanced emaciation—the skin of an earthy colour, the belly somewhat prominent and hard, the pulse very frequent, but not much febrile heat. He said he felt painful twistings in the abdomen, with a sensation as though some globular body was ascending

to his throat. He was still affected with diarrhœa. Death put an end to his sufferings on the 12th of January.

"*Dissection.* Excepting some old adhesions and a few incipient tubercles, there was nothing particular in the lungs. *Abdomen.* All the viscera bound together by the disease of the peritoneum, which membrane was thickened, discoloured, and formed, with the diseased epiploon, a dense covering, through which were scattered a multitude of tubercles, filled with whitish matter. On the intestinal peritoneum these granulations resembled variolous pustules. The mesentery was morbidly thickened, and its glands tuberculous.

"The mucous membrane of the stomach was a little red, but only in detached patches; the internal surface of the small intestines little affected; that of the colon was generally red, with ulcerations of greater or less extent. The liver sound, the spleen somewhat tuberculated. On the surface of the diaphragm several tubercular productions as large as a pullet's egg." 450.

We suspect that many cases of what is called *common ascites* would, upon minute investigation, present phenomena analogous to the following.

Case. Chronic Peritonitis, with Dropsical Effusion.

"Boulard, a fusileer in the 35th Regt. a man about 30 years of age, stout and muscular, having got cold, by exposure to rain at the siege of Ulm, became suddenly leucophlegmatic. The dropsical effusions, however, gave him so little uneasiness, that he kept at his duty during the winter campaign in the mountains of Styria and Carinthia. In March, 1806, four months after the exposure above mentioned, and the commencement of his complaint, the dropsy forced him to enter the hospital of Udina.

"He had now general anasarca; complained of no particular pain; had only a little malaise and dyspnœa, with some cough at night. Pressure on the abdomen caused no pain, unless it was very strongly made and then it was so obscure and confused, that no indication could be drawn from it, since strong pressure on the abdominal viscera gives uneasiness at all times, even in health. The patient had no fever, an excellent appetite, the complexion unaffected, and, in short, there was reason to hope that the disease might be idiopathic dropsy. By a proper employment of aperient and diuretic medicine, the dropsical effusions were almost completely evacuated in three weeks; but the medicines gradually lost their effects, the dropsy returned, and the patient finally sunk on the 6th of April, 1806, about five months from the origin of his ailments.

"*Dissection.* The lungs much pressed upon by the protuberant diaphragm, and somewhat engorged; but no disorganization of structure. *Abdomen* filled with a whitish serum; the peritoneum thickened, non-transparent, and almost every where lined with a white, pulpy, and easily separable exudation. The mucous membrane of the intestinal canal sound throughout."

The above state of the peritoneum is doubtless the cause, in numerous instances, of those obstinate relapses which occur, from time to time, in cases of ascites. But dissection is too little at-

tended to in death from dropsy. An important practical indication, however, may be deduced from these researches; namely, that where no abdominal viscus appears obstructed in ascites, we should examine minutely into the state of the peritoneum, and *generally* suspect some inflammatory action in that extensive membrane. Much might probably be done by leeching the abdomen, and blistering, while evacuating the collected effusions by diuretics and aperients.*

We shall extract but one more case of this disease, and may it prove a useful beacon against the dangerous doctrines of *debility*, on which even a Broussais has too often been wrecked!

"*Case.* Pagnet, 22 years of age, a fusileer, in the 84th Regt. received a wound in the foot; for the cure of which he entered the hospital of Udina, and remained there three months, with the following symptoms. From the time of his entrance he complained of pain in the belly, which was very tense, while the aspect of his countenance evinced that he had been unwell for some time. The wound of his foot would not heal, but remained stationary in spite of every thing they could do. He had evening fever. Tonics and stimulants always made him worse, and frequently nauseated his stomach. About the middle of May, fifteen days before his death, Pagnet complained that the pains in the abdomen, which had hitherto been of a dull obtuse kind, were now become acute; and, in a short time, they became so aggravated that the weight of the clothes was insupportable. Fever was now strongly developed, with burning heat, and much fœtor of all the excretions. The stomach would not retain any thing, and he was harrassed to the moment of his dissolution, with the most excruciating sufferings and ardent fever. '*Il souffrait continuellement des douleurs horribles, et était dévoré par une fièvre ardente qui, par sa violence, paraissait fort au dessus des ses forces*'."

It does not appear that any depletory measures were put in force, at any period of this wretched man's complaint! The following ravages of inflammation are coolly detailed, without M. Broussais' appearing to even dream that there was the least mismanagement of the case!

"*Dissection.* Evidence of universal peritonitis, with a concrete exudation, while a black, purulent sanies, of stercoraceous fœtor, filled all the intervals which the adhesions had left. The intestines were sphacelated in numerous points, and perforated like a sieve in many places. Through these perforations, fæcal matter and intestinal gases had passed into the cavity of the abdomen. The mucous membrane of the bowels was sound throughout, excepting at the places where the perforations were situated." 482.

It is totally inexplicable how our continental brethren can see these things, and accurately describe them, without, in the smallest degree, profiting by the results of their pathological labours!†

* See our Review of Dr. Crampton's excellent paper on dropsy, in No. 5, Quarterly Series.

† These observations are not candid; Pagnet never was under the care of M. Broussais, and his case is brought forward for the avowed

If they *will* continue blind to the light of truth, let us profit by their oversights. These pathological specimens could not occur in Great Britain; but they are most invaluable, as establishing the solid basis on which the energetic practice of this country, in acute diseases, rests.

It is now time for us to close this article. We have endeavoured to form a focus, whereby the rays of light, from various quarters, might be made to converge on a single point, and illuminate an important subject. Should our labours meet the approbation of the profession, we shall continue them, while health and life are spared, until this Journal shall become a depositary of medical illustrations that may render it a useful and authentic source of reference, on all the leading points of pathology and practice. If TIME should confirm these (we trust) laudable anticipations, it will hereafter cheer the gloom of ebbing life, to reflect that we have not lived in vain, nor suffered the vigour of manhood to pass without contributing our quota to the mighty impulse which guides the march of human knowledge at the beginning of the nineteenth century.

INSANITY.

1. *Sound Mind; or, Contributions to the Natural History and Physiology of the Human Intellect.* By JOHN HASLAM, M. D. Octavo, pp. 192. London, 1819.

2. *An Inquiry into certain Errors relative to Insanity, and their Consequences; Physical, Moral, and Civil.* By GEORGE MAN BURROWS, M. D. F. L. S. &c. &c. &c. Octavo, pp. 320. London, 1820.

3. *On Mental Derangements.* By M. ESQUIROL, M. D. Physician to the Salpétrière, &c. &c.
[Art. FOLIE, Dict. des Sciences Méd.]

" Huic ego vulgum
Errori similem cunctum insanire docebo." HOR.

The union of mind and matter is a mystery that will never be solved by man; and consequently, the disquisitions on it will be interminable. The intimate connexion or absolute dependance

purpose of illustrating the effects of the disease, when left to nature or improperly treated.—*Am. Ed.*

of mind on matter, will for ever furnish the materialist with inexhaustible arguments for their identity; while the wide range of phenomena exhibited by the operations of mind, and which are totally inexplicable by the known laws of matter, will furnish abundant arguments for the Platonic Philosopher to vindicate the existence of that—

> ——— Divinity that stirs within us,
> And points out an eternity to Man!

We will not, therefore, involve ourselves in metaphysical speculations; but keep to the usual line of our policy, practical pathology and therapeutics.

Of the three works which lie before us, the two first afford us comparatively few materials for the construction of this article; Dr. Haslam's Essay being almost entirely composed of elementary and physiological facts and deductions, well known to every physiologist and philosopher; while the work of Dr. Burrows, though exceedingly important in its way, turns chiefly on the correction of certain moral, civil, and popular errors attending insanity, the Insane, and Lunatic Asylums.

A perusal of Dr. Haslam's Essay will convince any man that the author's *mind is sound*, his judgment correct, his perceptions clear, and his deductions legitimate. The style of his work too is of a very superior kind, and might be taken as a model for philosophical and medical disquisitions.

From Dr. Haslam's concluding chapter we shall condense some reflections, and exhibit some specimens that *may* prove interesting to the reader, and *must* prove honourable to the writer.

Dr. H. well observes, that a contemplation of every gradation of mental energy, from man to the maggot, impresses us with the evidence of appropriate contrivance and wisdom. The mental endowments, however, which animals possess, keep them stationary. They cannot comprehend; and if they did, they want the means to communicate, consequently every attainment perishes with the individual.

"As they have not been endowed with the capacity to numerate, they can experience no solicitude for the past, nor apprehensions for the future. In the Grammar of Animals, the present is the only tense;* and to punish them for the faults they had formerly committed, would be equally absurd and tyrannical. They are not the creatures of compact, and being unable to comprehend the nature of institutions, and obligation of laws, they cannot be responsible agents." 187.

The above truths only go to prove that animals are not amena-

* This is going rather too far. The bee in constructing his cell, and the beaver his house, certainly appear to know something of the *future* tense, as well as the present. *Rev.*

ble to human laws; and the conclusion is, that a future state of existence for them is highly improbable—for *there* too, they could not be justly punished or rewarded.

The features of the human mind are very differently shaped, "and strongly indicate an ulterior destination." Man is rapidly progressive, his mind becoming opulent from the intellectual treasures of his ancestors, which he bequeaths, in turn, to his posterity.

"Had he, like animals, been gifted with intuitive wisdom, the donation would have been so perfect, as to render instruction superfluous; and such endowments would have diminished the measure of his responsibility. The freedom of his will, by which is to be understood the impulse of reason, not the blind dictates of appetite, nor the sallies of tumultuous passions, renders him amenable. 190.

Man alone can repent; retracing the acts of former commission, and resolving on amelioration for the future.

"In proportion to our love and estimation of justice, we must be satisfied that, under the present forms of government, it is but imperfectly administered: the rewards and punishments in this life will ever be blended with the hopes and fears, the interests and passions of our species; and there is much of evil, which human sagacity cannot detect. When we consider the attributes of Deity and the nature of Man, we can never be induced to conclude that the tribunals of this world are the courts of final retribution. Man bears in his intellectual construction the badge of moral responsibility; and consequently, the germ of future existence: and the only incentive that can urge him to the advancement of science, and the practice of virtue, is the reward that Revelation has unfolded." P. 192.

From these sublime and momentous reflections, we must descend to the concerns of our frail and perishable existence, in this sublunary scene. We come therefore to the work of Dr. Burrows.

Our author justly conceives, that the scholastic dogma of insanity being a disease of the *mind*, as an immaterial essence, has been very prejudicial, by directing the practitioner's attention entirely to moral remedies, where the predicate, he thinks, may be safely hazarded, "that he who relies, singly, on moral means, will be as surely disappointed, as he who resorts to the art of medicine only, for the cure of insanity." 7.

Dr. Burrows seems to have good reason for believing, that the curability of insanity is considerably under-rated by the world at large. In short, the *cures* of insanity are as carefully concealed in families, as the disease itself. No eclat attends them.

"The physician by whose skill they are accomplished is never mentioned. There is only the darker side of the picture presented to the public view; and consequently a reproach, severer than deserved, attaches to the healing art." 10.

Among the prevailing errors regarding insanity, our intelligent author ranks, 1st. its difficulty of cure; 2d. that insanity is an increasing malady; 3d. that insanity is an exceedingly prevalent malady. This leads him to open the body of the work with a discussion on the above topics.

1. *Is Insanity curable; and in what proportion?*

Although the records of Lunatic Asylums are very defective, yet, from numerous returns which our author has collected, with great industry and expense, from several private, and all the public establishments for the insane in England and Scotland, Dr. Burrows concludes, that not only is insanity a curable disease, but "that a very large proportion of lunatics, under a proper system of management, actually recover." 36.

The second question is, whether Insanity be as susceptible of cure as other maladies?

Without discussing the question whether insanity, like most other diseases, has its access, crisis, and decline, this much is certain, that "the difficulty of cure is more or less, according to the time which has elapsed since the incipient attack, or the complication of mental with bodily complaints." We apprehend that Dr. Burrows would have been more correct to have said "*moral with physical*," than "mental with corporeal;" since all acknowledge now, that insanity is a *corporeal* disease, either of function or structure. But this is of no consequence.

Now it unfortunately happens, as Dr. Burrows well observes, that the approach of insanity, though generally perceptible especially to strangers, is rarely remarked by relations; but is construed into nervous irritability, or eccentricity, or any thing rather than the right. The complaint is suffered to proceed till some terrible exacerbation of delirious fury or despondency ensues, and the malady is thus confirmed in one whose intellects, very probably, might have been preserved, had timely aid been administered. Thus, "did mental derangement experience the same prompt attention as most other complaints, it is impossible to judge how much more favourable the results might prove." But, as Dr. Burrows justly observes, the reverse almost always obtains; and consequently, insanity more frequently degenerates into a chronic or continued type than any other disease, and has not the same advantage from the means of cure.

In addition to the above obstacles, there is too often opposed to the exertions of the physician, the influence of pride, suspicion, deception, and alas! the avarice, or other interested motive of friends, who very often object openly to the prescription of remedies. Yet, under all these disadvantages, we have incontrovertible

evidence how great a proportion of lunatics recover, as the records of public and private Asylums testify. In 1798, Dr. Willis stated, in the House of Commons, that nine cases out of ten of insanity recovered, if placed under his care *within three months of the attack.* Doubts of his veracity were then and afterwards entertained; but few men ever possessed the essential auxiliaries to success which Dr. Willis did.

"We now see that, in situations, perhaps less promising, eight in ten, and even six in seven *recent* cases are reported, and believed to have actually recovered." 44.

In La Salpétrière, at Paris, the proportion of cures of recent cases, was, 1806-7, according to Dr. Carter, almost as high as that of Dr. Willis; and, according to Dr. Veitch's official statement to Parliament, nearly two in three of the recent cases were discharged cured, while only five out of one hundred and fifty-two old cases recovered. In Dr. Burrows' own practice, of about three hundred cases, the proportion of cures exceeds any which is here stated; being ninety-one per cent. in recent, and thirty-five per cent. in chronic. Upon the whole, our author thinks he is justified in concluding, that insanity is fully as curable as the general run of other diseases.

The next question is—"*Is Insanity an increasing malady?*"

Mental derangement has been truly designated the "vice of civilization;" for the more polished and artificial the people are, the more prone are they to insanity. In Spain, where the inhabitants are more characterized by primitive manners, especially temperance, mania is said to be comparatively rare; while the unsophisticated Aborigines of North and South America, are reported by Rush and Humboldt to be wholly exempt from this irritation.

All the physical causes of insanity Dr. Burrows considers to be *extraneous* or artificial, except one; to wit, hereditary predisposition, or that peculiarity of organization transmitted from parent to progeny, and "which alone can be rationally supposed to have a progressive operation in augmenting the number of the insane." To this we cannot entirely subscribe, Dr. Burrows, in the preceding page, acknowledges that the more polished and artificial the people, the more prone are they to insanity. It follows, surely, from this, that the progress of civilization augments the *causes* of insanity, and consequently the number of the insane. That civilization, refinement, luxury, and effeminacy, are, at this moment, on the increase, we believe few will be inclined to deny. We conceive too, that the more *thinking* a nation becomes, the more prone will it be to mental derangement. Learning is every

hour increasing throughout the lower orders of society, and we all know—

"That shallow draughts *intoxicate the brain*;"

nor is it likely the aforesaid classes shall drink so deeply at the fountain of knowledge as that it shall "sober them again." When we come to Dr. Esquirol's work, it will be seen how powerfully scepticism and materialism have tended to destroy the happiness of the French people, and conduced to insanity and suicide. It is a melancholy truth, that irreligion and scepticism are making rapid strides in this country, and the consequences will be doubtless the same as in France. It is from a general view of these circumstances, rather than from the numerical returns of Lunatic Asylums, that we would be led to the conclusion, that insanity has increased and is increasing.

The following extract from a private letter of Dr Halloran to a physician of the metropolis, shews that in Ireland, at least insanity is on the increase.

"With us it is but too obvious that this malady is still greatly on the increase; and the misfortune is, that we have not even yet seen the worst of it. The desperate break-up of property here, amongst the speculative farmers and *middle men*, as they are called, who, for a series of years, were in the enjoyment of affluence, is beyond all belief. To these in particular, now reduced to actual poverty, in numerous instances may be ascribed the extraordinary run of maniacal cases which, in fact, are daily offering; and who, on feeling their individual share of the general crash, are unable to bear the reverse of circumstances to which they are exposed. In order to drown care, therefore, they become an easy prey to the effects of drunkenness, want, and disappointment combined."

To such an extent has the misfortune arisen, that the public Asylum at Cork is now overloaded with fifty cases more than it is calculated to hold, and the Grand Jurors have voted a sum of 4400*l.* to be laid out, under Dr. Halloran's superintendance, in the construction of increased accommodation for the insane.

This, by the bye, is a tolerable proof of the respect in which the professional and private character of Dr. Halloran is held by his fellow citizens, though one of our London hyper-critics accuses him of ignorance and materialism!

Dr. Burrows enters into a long and critical examination of the registers above mentioned, the aggregate of which exhibit an evident increment of the disease. But we cannot follow our able author in this scrutiny. He has plainly proved that these returns are fraught with error, and exceedingly liable to be influenced by various circumstances that render them weak authority. Still, as we said before, we look to the etiology of insanity, rather than numerical tables, for evidence of its progressive increase.

In the question of the *comparative* prevalence of insanity in this, and other countries, Dr. Burrows has brought forward many important documents, and made some excellent observations. He has clearly proved, that *suicide* is infinitely more prevalent in Paris, Berlin, Copenhagen, and probably many other capitals, than in London; and thus rescued his country from a common, though unjust, accusation. This section is concluded in the following words.

"But enough, surely, is advanced, to refute the general conclusion, that insanity is extraordinarily prevalent, and that it exceeds in England." 105.

In the next section, indeed, our author attempts to prove, from certain official returns, that insanity has actually decreased within the last few years, which he attributes not to any abatement of the *causes* of the disease, but to a more successful *practice* pursued. That the treatment of insanity, both moral and physical, is improved of late, we are ready to grant; but we are somewhat sceptical, as to the inference which our author has drawn on this point. We must pass over some sections on the state of Lunatic Asylums, and on the condition of the epileptic, fatuous, and idiotic, as not coming within the objects of our Review, though highly creditable to the author and interesting to the public.

The 9th section embraces the question—"*Is Religion a cause or an effect of Insanity?*"

Dr. Burrows quotes the opinion of the Chancellor de l'Hopital, "that religion has more influence on mankind than all their other passions combined." Of this truth, he thinks the whole world is an illustration.

"And as there is no single passion that may not be excited to an excess inducive of mental derangement; so we may readily believe that religion, which influences the internal man more than the passions collectively, may be a cause of insanity. On the other hand, there is no doubt that a lunatic may imbibe a religious, as well as any other hallucination; and yet be insane from a cause very contrary to religious. In the one case, however, it is a cause; in the other, an effect. Now, a great source of error seems to arise from the confounding of this necessary distinction." 173.

We believe that it would be more correct to call it fanaticism than religion, when it produces insanity. The following sentiments, from such a man as Dr. Burrows, will be read with interest in the present times of scepticism and irreligion.

"Religion, it must be acknowledged, is the very essence of humanity. Without it, man has no guide but his passions—no law but his will. Even savages have some notion of a DEITY, or a future state:

and although it be not always a GOD of MERCIES they adore, yet, divest them of the sense of a superior and presiding Power, and the character of the people would sustain a material change; and, perhaps, for the worse. What follows, then, when scepticism and infidelity reign, where Christianity once shed its pure and benign influence? The human mind having lost that prop which was its stay in the hour of need, chaos ensues; despair succeeds to hope; and reason, which establishes man's supremacy on earth, is overthrown. Here insanity supervenes on the defect of religion. As a cone inverted; so, we may be assured, is the state of morals where religion has been extinguished: it is a fabric without a foundation; and there insanity will emanate and most exceed." P. 178.

Dr. Burrows thinks that, were the remote cause of insanity, when marked by religious exaltation or despondency, to be traced, the lunatic would be found a convert from his original to some new faith—" and that the aberration was usually developed during the transition."

Our author illustrates the above position by five or six very apposite examples, which came within his own cognizance. Indeed, the whole of this section is executed in Dr. Burrows' best style of strong and forcible reasoning. At page 218, there is a passage which we deem worthy of extracting, for the benefit of our readers.

" Were I to allege one cause, which I thought was operating with more force than another, to increase the victims of insanity, I should pronounce, that it was the overweening zeal with which it is attempted to impress on adolescence, the subtle distinctions of theology, and an unrelenting devotion to a dubious doctrine. I have seen so many melancholy cases of young and excellently disposed persons, of respectable families, deranged from either ill-suited or ill-timed religious communication, that I cannot avoid impugning such conduct as an infatuation, which, as long as persevered in, will be a fruitful source of moral evil. The old Romans knew human nature better: they had a law which forbad any person entering upon the sacerdotal office before the age of fifty. This was to prevent theological discussions before an age was attained when a bad effect was not to be apprehended." 218, 219.

Dr. Burrows objects to the commonly received opinion, that " religious insanity," as it is called, is incurable, or at least, extremely difficult of cure. Whenever he has been left to follow his own judgment, however deeply the mind was imbued with religious delusions, he has never, in recent cases, found particular difficulty in curing the patient.

The subject of the 10th section naturally arises out of the preceding:—" the efficacy of religious instruction of lunatics." We entirely agree with Dr. Burrows, that before religious instruction, in any form, be attempted, an intimate knowledge of every patient's state of mind, and of his former and present opinions, should be acquired; consequently, that no minister can assume

this office of instruction, unless he have constant intercourse with the patients, and be well acquainted with each. No man, except a zealot or fanatic, will question the truth of the following passage.

"Suppose a certain number of lunatics were selected, whose cure, it may be thought, religious instruction will facilitate. Is it not clear, that the spiritual admonitions which may be adapted to one, may be a source of irritation to another? For where men who are called sane, are so exceedingly tenacious about the mere forms and ceremonies of worship, and are thence impelled to acts little short of madness; how can we imagine, that, among a number, some insane, some weak of intellect, and some not confirmed yet in judgment, offence should not be taken, if the doctrine or rites, most consonant with each patient's notions, be not preferred? Without, therefore, the utmost precaution, it is not difficult to determine, that the introduction of spiritual subjects must be dangerous and often injurious." 227.

There are doubtless, as Dr. Burrows observes, many lunatics to whom religious instruction would be extremely useful; but it is evident that this must be exhibited *individually*, and adapted to the particular case. It is extremely problematical if any discourse, however carefully composed, would ever suit a lunatic *audience*.

"It results, that religious instruction must, in the first instance, be tried as an experiment: the only safe way in which it can be essayed, is by a previous personal examination of each patient's state of mind and feelings; and if pronounced in a fit frame, there can be no question, that the inculcating of the simple and benign precepts of Christianity, will not only be found an efficacious auxiliary to the restoration of a sane understanding, but to the subsequent preservation of it. For true religion yields to the afflicted—relief; to the sinner—hope; to the repentant—forgiveness; and to all who possess a sound mind, and believe, is "the source of light and life, and joy and genial warmth, and plastic energy." 232.

The remainder of Dr. Burrows' work is principally taken up with "suggestions respecting legislative regulation of Lunatic Asylums, &c." and tables of official and other reports from various Institutions, public and private, for the reception of insane persons. These we cannot enter upon, in a medical review; but refer to the work itself, which does great credit to Dr. Burrows' industry, zeal, and well-known talents.

From his strictly medical work on Insanity, which he has long promised to the profession, and which he still promises, we anticipated a fund of important and useful observations, an account of which we shall not be slow in communicating to our readers. We may remark, in closing this article, that the author has candidly apprized the public that the work is not to be considered as a contribution to *medical science*, in its strict sense; it is consequently written in a familiar, but certainly a neat, and even

in some places an elegant style, perfectly appropriate to the subject of the volume.

And now we must take up Dr Esquirol's Essay on Insanity, which is more adapted to the nature and design of our Review than the two works of our respected countrymen, Drs. Haslam and Burrows.

Among the leading articles in that great national, but unequal work, the DICTIONAIRE DES SCIENCES MEDICALES, Dr. Esquirol's paper on Insanity, holds a distinguished rank, not only on account of the talent, but the extensive experience, and accurate observation of its author. The article occupies eighty pages of the Dictionary, and has cost us considerable labour to translate, analyse, and condense it, within the limits of this Review. We hope, however, that we shall render our professional brethren, in this country, some service, by diffusing among them the observations on insanity of an illustrious foreigner, though at the expence of some midnight vigils on our parts.

§ I. The symptoms of insanity relate to an alteration in the thinking faculty—a subversion of the moral affections—lesions of function in the organic life. The sensations of the insane are perverted, and they appear the sport of erroneous impressions. The sense of *sight* evinces a thousand illusions. The maniac often knows not his friends or relations, frequently mistaking them for strangers or enemies. A great number of insane, imagine they *hear voices*, which speak distinctly to them, and with which they hold conversations. These *voices* pursue them and harass them by day and by night—in public and private—in their walks—in their travels and in their closets. The sense of *smelling* does not escape these perversions.

"*Case in Illustration.* A lady, 27 years of age, in the last stage of phthisis, perceived in her room an odour of charcoal. She immediately conceived that there was a design against her life. She left her lodgings, but the *fumes of charcoal* incessantly pursued her till her death."

It is not uncommon for the *taste* to be perverted at the commencement of insanity, generally from derangement of the stomach, the perversion disappearing with the cause which produced it. How frequently do we see the alienated deceived in respect to the size, the form, and the weight of things around them. The greater number of them become unhandy in all mechanical occupations, music, writing, &c. The *sense of touch* having lost its peculiar power of correcting the errors of the other senses.

These perversions sometimes affect but one sense, often two—

more rarely three—but occasionally all. Errors of hearing and sight, however, are by far the most frequent of the perversions. With these derangements, we also find combined, a *multiplicity* of sensations—a superabundance of ideas, and a versatility of resolutions, produced without order, object, or end. This exuberance of thought permits not the insane to fix his attention long enough on each sensation, and each idea so as to separate the false from the true—consequently, he becomes incapable of comparing and abstracting. The result is, a fleeting delirium, [délire fugace] the object of which is perpetually renewed, in every imaginary form. More generally, however, there is one predominant idea or train of thought, on which the attention is exercised with such intensity, that all others are excluded, or, as it were, swallowed up. This may be termed *Monomania.*

In other cases, the sensations appear to be so weak as to leave little or no impression on the sensorium. The patient remembers only things long past, and no new ideas are formed. Such is idiocy.

In some cases of mental alienation, the person seems beyond the empire of the will, and is no longer master of *his own* determinations. He appears directed by an irresistible impulse, to acts which he himself abhors. One person will feel condemned, as it were, to silence and inaction; another will walk, talk, dance, sing, or write, without the power of stopping. Others again, commit acts of fury, at which they shudder the next moment. All the phenomena of insanity show the vast influence of the *passions* in this affliction. They are always *impetuous*, whether they be of the gay or the sombre cast, in mania, monomania, and melancholia.—In idiocy, they are only such as are founded on the primary wants and impulses of man—as love, anger, jealousy.

In mental derangement, the sense of delicacy is obliterated; and people of the finest previous feelings, will deliver themselves up to the most indecent or culpable actions, without the consciousness of impropriety.

Pusillanimity is a remarkable trait in the character of the insane. They are timid, distrustful—suspicious—never satisfied with their present condition, but always desirous of being where they are not. They have no care for the future—all their anxiety is for the present moment. It is this discontent of mind which detaches them from their parents and friends, and causes them to hate the most, those whom they before most cherished. There are a few exceptions, indeed, where the insane still preserve an inviolate affection for those whom they previously loved or esteemed: but such affection is without confidence in the objects, to whom they will give no ear in respect to precepts or advice. This alienation from friends is one of the most constant and pathognomonic traits of the malady.

The return of the moral and social affections, within just bounds, the desire of seeing their children, parents or friends, and of resuming their wonted habits or employments, afford the best hopes of recovery; and *vice versa.*

§ II. In respect to *physical* phenomena, we see the vital powers of the insane often exalted to a degree that enables the maniac to resist the influence of very powerful external agents. But this exaltation is not so *general* throughout the system as people imagine. If there be greater force or vital power in one class of organs or parts, there will be a deficit in some others.—Among the physical phenomena of insanity, few are more constant or remarkable than want of sleep, and that peculiarly disagreeable odour from the body, as well as the excretions of the patients, which impregnates the clothes and bedding. Some are devoured with a burning internal heat; most have a voracious appetite, and constipation or other irregularity of the bowels. A great proportion are afflicted with *pain* in some organ or part, especially the head, the chest or the abdomen, which the insane generally attribute to the malevolence of their enemies.

From the preceding and many other phenomena, then, mental and corporeal, we may fairly conclude that, in insanity, the vital powers are deranged; the senses impaired; the faculties of perceiving, comparing, and associating the ideas, disturbed; together with more or less lesion of function in the organic life. Such are the *facts*, without any mixture of hypothesis, and without attempt at explanation. Nevertheless, the following hints may be practically useful.

A young man conceived himself at court, and surrounded by courtiers. He prostrated himself at the foot of the supposed sovereign, and became enraged when he saw the servants take liberties with his imaginary king. M. Esquirol caused a bandage to be placed over his eyes for two days, during which the delirium entirely ceased; but on removing the bandage, the hallucination returned. Reill states, that a woman conceived she saw spectres, and fell into a convulsive delirium. Her maid servant placed her hand over her mistress's eyes, when the latter immediately cried out, "I am well," the spectres having disappeared. These hints are worthy of attention, especially in monomania. The insane, on recovering, preserve a distinct recollection of all that past during the hallucination.

§ III. M. Esquirol classes insanity in the following order.

A. Monomania or melancholy; in which the hallucination is confined to a single object, or to a small number of objects.

B. Mania; in which the hallucination extends to all kinds of objects, and is accompanied by some excitement.

C. Dementia; wherein the person is rendered incapable of reasoning, in consequence of functional disorder of the brain, not congenital.

D. Idiotism congenital, from original malformation in the organ of thought.

M. Esquirol then presents four figures drawn from life, illustrating these four classes of insanity, with graphic sketches of the patients.

"The first, or example of melancholia, is a young woman, 23 years of age, who was brought into the Salpétrière in July, 1812, perfectly taciturn, and desirous of being left quietly in her bed. Great difficulty was experienced in persuading her to take food; but the effusion of cold water conquered her resolution. During the four years that this woman has remained in the hospital, she has scarcely uttered a syllable. She must be taken out of bed, and when placed on a seat she remains in the same attitude the whole day afterwards; the head reclining over the left shoulder; the arms crossed; the eyes fixed. The food is put to her mouth, and she eats without changing posture. When placed in bed, she muffles herself up, and remains in the same position the whole night. She is meagre, her skin brown; her hands and feet often of a violet colour; pulse slow and feeble; menses very irregular; constipation obstinate.

"The next plate represents *mania furibunda*. The unfortunate subject of it is a married woman, 55 years of age, who entered the Salpétrière, April 1814, in the state above mentioned. She is of tall stature; hair white and bristled; eyes blue, sparkling; haggard; physiognomy very changeable; skin pale; emaciated.

"It appears that some losses in business, injurious reports, and domestic troubles, gave origin to the complaint. Her hallucination was general; she abused all the world, was excessively violent, and in constant agitation. Warm and cold baths, opiates in large doses, and various other means were tried, in vain. Nothing but the straight waistcoat could secure her. On the 4th of January, 1815, one year after the commencement of the malady, the weather being very cold, she suddenly expired, without any premonitory symptom indicative of such an event. Anatomical investigation could discover no trace of altered structure in any part of the corporeal fabric.

"The third plate presents the profile of a female 70 years of age, who, after having passed several years in a state of mania furibunda, is fallen into that of DEMENTIA or idiotism.

"The hallucination of this patient corresponds with her advanced age, and the long duration of the complaint. She preserves a few ideas, which still savour of pride. She believes herself the daughter of Louis XVI. but otherwise there is no coherence; no memory of recent transactions; no hopes or fears, desires or aversions. She is calm, peaceable; sleeps well; eats without voracity; and appears perfectly happy.

"The fourth plate exhibits the profile of an idiot; a young woman, 21 years of age, who has been in the Salpétrière three years, without any change. Her head is large and irregularly shaped; the forehead high and prominent, so that the facial angle is more than 90°. She eats voraciously, and without discrimination; passes all evacuations involuntarily; menses regular and abundant; walks little; all her move-

ments convulsive: in short, she is a perfectly helpless infant; insensible to every thing around; heat, cold, rain, or even her own internal feelings. She can only utter the words '*papa and mama*,' which she frequently repeats. No history of her complaint could be procured."

Having now sketched an outline of the symptomatology of insanity, we proceed to an interesting division of the subject; its etiology.

§ IV. *Causes of Insanity.* These are very numerous, both moral and physical. Climate, seasons, age, sex, temperament, profession, modes of life, political situation, civilization, public manners—all exercise an influence in the production of this calamity.

Climate. Insanity does not abound in hot climates, but in the temperate; especially those which are subject to great atmospherical vicissitudes. The influence of climate on this disease, however, has been exaggerated. Thus Montesquieu attributed the great number of suicides in England to the foggy state of its atmosphere; but we shall trace the circumstance presently to a more powerful cause.

Insanity is evidently *endemic* in some regions. In marshy countries *idiotism* prevails. *Cretinism* is endemic in the gorges of the Mountains. A member of the Institute informs us that the disease was found only where the soil was *calcareous*.

Season. Extremes of heat and cold, in Europe, conduce to the production of insanity. We see the effects of coups de soleil. The French soldiers, on first going into the hot vallies of Spain, were much affected with insanity; and the same was the case in the disastrous retreat from Russia. Many of the officers and soldiers became insane, the disease being first acute, passing suddenly into the chronic state. In those who died, the dura mater was found very much thickened.

"The insane are greatly disturbed and exasperated by any sudden atmospherical commotion. About the Equinoxes, each Lunatic Asylum presents a scene of louder uproar, and requires stricter discipline, than at other seasons. From tables kept at the Salpétrière, during the last nine years, it appears that the admissions were most numerous in the months of May, June, July, and August—less so in September, October, November, and December; but least of all, in February and March. The influence of the seasons on the *march* of the disease bears analogy to the above rule."

In respect to *Lunar* influence M. Esquirol cannot confirm the long prevalent opinion. He observes, that the insane are certainly more agitated about Full Moon; but so are they also about day-break, every morning. Hence, he conceives, the *light* to be the cause of the increased excitement at both those periods.—

Light, he asserts, frightens some lunatics, pleases others; but agitates ALL.

Some authors have ascribed an occasional *epidemic* character to insanity; as Stegman and Sydenham. It is certain that, in some years, independently of all moral causes, insanity is more prevalent than in others.

Age. Infancy appears to bid defiance almost to insanity, unless there be some congenital malformation, or idiotism be induced by convulsions or epilepsy. Nevertheless our author, and others have met with cases of mania arising in very young people. It is about the age of puberty, however, that the causes of insanity begin to operate powerfully on youth. The disease, at this epoch, of course, is characterised by rapid march, and height of excitement; in adult age, it is more chronic. In early life, it is more commonly complicated with affections of the abdominal viscera, and is relieved by the development of hæmoorhoids, and by critical discharges from the bowels. At a more advanced age, with paralysis and apoplexy; and is of more difficult cure.

Sex. Upon a comprehensive comparison, it has been found that there is no other disproportion among the insane of both sexes, than among the sane population in general.

Modes of Life. Intense study, especially where the efforts of the mind are directed more exclusively in one channel, predisposes to insanity. But great genius, and well regulated learning, have no tendency of this kind. If a man, however, meditates incessantly on a partieular subject, metaphysical or speculative, all his physieal and moral faculties are absorbed, as it were, in the pursuit; his health is neglected; the epigastric viscera become deranged, with torpid chylification, the result of bad digestion; the secretions are depraved; the functions of the skin impeded; and hypochondriacism or melancholy steals over the devotee of letters and meditation. If these excessive meditations and studies take the channel of religion or fanaticism, then there is great danger that the seat of reason may sooner or later give way. Various epochs have been remarkable for the prevalence of insanity; as the times of the Crusades: the Calvinistic and Lutheran disputations, revolutions, &c. Liberty and reform gave a strong impulse to insanity in France, "and it is remarkable (says M. Esquirol) that the character of the insanity varied and corresponded with the different storms which burst over our country." "*Il est rémarquable que les folies qui ont éclaté depuis trente ans, ont eu pour caractère celui des differens orâges qui ont troublè nôtre patrie.*"

The progress of civilization, too, by laying us so much at the mercy of the vicissitudes of fortune around us, and thereby rendering us morbidly sensible to every occurrence, predisposes astonishingly to insanity. Hence the sceptre, the court, the palace, the high military command, the exchange, and riches themselves are no protection against this deplorable evil!

Sedentary habits, intoxication, excess in venereal and solitary pleasures, all predispose to, or even excite insanity.

"La masturbation, ce fléau de l'espèce humaine, est plus souvent qu'on ne pense, cause de folie, surtout chez les riches."

A twentieth part of the insane females admitted into the Salpétrière are previously prostitutes. The following melancholy picture presents an awful lesson to the world at large!

"Religion (says our author) no longer obtains, but as a mere ceremony, on certain solemn occasions. She no longer carries consolation or hope to the bosom of the wretched! Religious morality no more serves as a guide for reason, in the rough and intricate path of life.—Cold-blooded selfishness has rooted out every source of feeling; and there is no where to be seen either domestic affection, respect, love, obedience, or reciprocal dependance. Every one lives for himself; and the ties, which used to connect the present with future generations, are dissolved."

"La religion n'intervient que comme un usage dans les actes les plus solennels de la vie; elle n'apporte plus ses consolations et l'espérance aux malheureux; la morale religieuse ne guide plus la raison dans le sentier étroit et difficile de la vie; le froid égoïsme a desséché toutes les sources du sentiment; il n'y a plus d'affections domestiques, ni de respect, ni d'amour, ni d'autorité, ni de dépendances réciproques; chacun vit pour soi; personne ne forme de ces sages combinaisons, qui liaient à la génération future les générations présentes."

Alas! if these be the fruits of knowledge, it may be well said that "'tis folly to be wise."

Great as the horrors of the revolution were, M. Esquirol considers their influence in producing insanity as nothing, compared with the corruption of morals and manners, public and private, resulting from the doctrines of materialism.

The Passions. The first wants of our nature relate to the preservation of the individual, and the reproduction of the species. They are so strong and universal, that they may be termed instincts rather than passions. These last are the fruits of developed intelligence and advanced civilization. Infancy is free from the passions, and, consequently, from insanity. As puberty and manhood advance, the instincts come forth in all their strength, and afterwards the *factitious passions* take their ascendency; as self interest, ambition, pride, avarice, &c. Now it is, that insanity breaks out, in all its varied forms and characters.

The passions and emotions most productive of this complaint are, love, fear, fright, rage, ambition, reverses of fortune, and greatest of all, *domestic chagrin*, or family dissention, which comprises all the miseries to which poor humanity is liable in this world!

The exhilarating passions or emotions are rarely the cause of insanity. Excessive joy will destroy life, but not reason. Those who become insane, after the sudden acquisition of riches, may attribute the disease to the altered modes of life which result, together with the generation of new passions and desires, rather than to the first emotions of joy on the event.

A signal source of insanity, as M. Pinel observes, is the struggle between the principles of religion, morality, and education, on one side, and the passions on the other. This combat in the breast of man often ends in the loss of reason!

"Moral frequently combine with physical causes in producing mental derangement, especially in women. A young lady, under the menstrual movement, was frightened by a peal of thunder. The catamenia were suppressed; the head became deranged, and reason did not return till the menses were re-established some months afterwards.—Another young woman had a safe accouchement. On the seventh day she was suddenly and unexpectedly reproached, in severe terms, by her father. The lochia and the mammary secretions were suppressed; mania furibunda followed, and required six months for its cure. This *combination* of moral and physical causes, in fact, is much more commonly the origin of insanity, than either of them singly. But the moral causes predominate far, in number and force, over the physical. It is the latter class, however, that comes more immediately within the province of medicine, and to which we shall now direct our attention."

Hereditary Organization is one of the most common physical causes of insanity, especially among the rich, where it is observable in every *second* case; while among the poor, the proportion is one in six. Children born before the commencement of insanity in the parent, are much less liable to the disease than those who are born afterwards. This unhappy predisposition is painted in the physiognomy, the exterior configuration, the ideas, the passions, and the habits of the offspring; and it is called into action by much slighter causes than would otherwise be necessary, when there is no hereditary taint. In short, it is perfectly analogous to the congenital predisposition to gout, phthisis, and some other hereditary diseases. This should always be borne in mind, in the education of children, whose parents were insane, and who should be placed as far as possible out of the reach of exciting causes of the disease. Hereditary insanity is not incurable on that account, though the cure is more difficult, and relapse more probable than under opposite circumstances.

The primary cause of insanity is often stamped on the tender fabric of the body, in utero, during lactation, or in the first dentition. Numerous were the women who, during the storms of the revolution, brought forth children, in whom the slightest causes produced insanity. Falls, or blows on the head, during infancy, frequently predispose to, or even excite mental derangement at some future period. Interruptions and irregularities of the menses were traced as the causes of insanity, in the proportion of about one in six; and the return of the catameneal period is, at all times, an epoch of irritation, in female insanity. M. Esquirol was led to attribute the origin of the disease, in many instances, to suppression of leucorrhœa in women, and the hæmorrhoidal discharge in men.

Parturition is a frequent cause of mental alienation. Out of six hundred females in the Salpétrière, and M. Esquirol's private asylum, fifty two dated the origin of their complaints at this epoch. Conception and pregnancy too, he believes, are occasionally the cause of this affection. He saw a young female who had a first attack of insanity immediately after marriage, a second attack at the period of conception, and a third attack during the second pregnancy. Each paroxysm lasted about a fortnight. Mental derangement occasionally takes place during lactation, generally with a preceding suppression of the milk.

Sudden suppression of the cutaneous transpiration is no uncommon cause of insanity; and it is in this way that atmospherical vicissitudes conduce to its production. A man was subject to copious sweats about the head. He was advised to wash himself with cold water. The perspiration was suppressed; but insanity became established. A young man waded across a rivulet while freely perspiring. He had a rigor on going to bed, and immediately afterwards turned maniacal.

Fevers not unfrequently leave a predisposition to insanity, which may not be excited into action till some years afterwards, when the fever is forgotten.

The sympathetic irritation of accumulations in the stomach and alimentary canal, has induced this disease, as also worms. A great number of chronic affections, as well by their inconsiderate removal, as by their spontaneous metastasis, have ended in mania. Epilepsy, in particular, is a fruitful source of mental derangement. Of three hundred epileptics in the Salpétrière, more than half are insane! Hysteria and hypocondriasis too often degenerate into the disease under consideration. The abuse of mercury and opium is occasionally the source of this complaint.

§ V. *Progress of Insanity.* The causes of insanity do not always act *directly* on the brain; more frequently, on the contrary, they are preying on some organ at a distance, the nervous, sanguiferous, or lymphatic systems; the digestive organs, or the organs of generation, being the primary seats of the evil. The *exciting* causes of insanity, moral and physical, sometimes produce the disease *suddenly*, especially in those who are strongly predisposed; but, in by far the greater number of cases, certain functional derangements have been going forward for years before the mental hallucination is developed; such as convulsions, head-aches, spasms, constipation, &c. On the other hand, in the intellectual system, we see ebullitions of the passions, or excentricities of temper, long precursory of the final overthrow of reason.

Insanity is either continued, intermittent, or remittent. The remissions of the disease offer some curious anomalies. A person will pass three months, for instance, in a state of melancholy; the three following months in maniacal excitement; and then three or four months in a state of fatuity; and so, successively, with more or less regularity. There are others who only experience paroxysms of excitement at certain hours of the day, days of the week, or even seasons of the year, the intervals being passed in a calm and quiet hallucination.

Insanity appears sometimes to terminate critically, like a fever. A certain change in the countenance, with sense of general lassitude; sleep; appetite; softness of the skin; freedom of the secretions and excretions; and a return of moral feeling, are indicative of approaching recovery. This will be perfect if, with the return of reason, the patient resumes his usual affections, habits, and general character. But if, on the other hand, the functions of the organic life are re-established—if the sleep, the appetite, the secretions, and the excretions come back to their usual healthy standard, without a corresponding sanity of mind, the disease is likely to pass into a chronic state, or fatuity itself.

§ VI. *Curability of Insanity.* From an accurate survey of the records of Lunatic Asylums, we are authorised in concluding, that cures are effected in about one in three cases of insanity. The probability of cure, in individual cases, depends greatly on the previous duration of the disease. M. Esquirol has constantly observed a marked *remission* in the course of the first month, after which it generally passes into the chronic state. It is in the *first* month, therefore, that we have the greatest probability of success. Physicians are divided in respect to the medium curable period of insanity. Into the Salpétrière, in ten years, [1804 to 13] were received two thousand eight hundred insane; of whom seven hundred and ninety-five were ultimately pronounced incurable, in con-

sequence of age, fatuity, or complicated diseases, as epilepsy, &c. Six hundred and four were cured in the first year; five hundred and two in the second; eighty-six in the third; forty-one in seven succeeding years. From these facts, we may conclude, 1mo. that, in the two first years of insanity, the greatest number of cures are performed; 2do. that the medium curable period is somewhat less than a year; 3tio. that after the third year, there is not above one in thirty cured. It is true there are a few rare instances of restored reason after a period of many years hallucination; but these cases are more calculated to prevent despair than inspire hope. The most favourable epoch of life for the cure of insanity is between the age of 20 and 30. After 50, there is little chance. Mania is more frequently cured than melancholia or monomania. Idiotism and the fatuity of old age are absolutely incurable.

There is a proportion of the insane who can only be restored to a *certain degree* of sanity. These retain a morbid and excessive sensibility to all the causes, moral and physical, which produce the disease. While kept quiet, and unexposed to any source of irritation, with attention to the general health, they enjoy a considerable share of rationality and tranquillity; but they are incapable of again mixing with the world, or fulfilling the functions of any office or employment, without risk of complete relapse. These bear a proportion of about one in twenty of the recoveries.

It is evident, from the preceding remarks, that we are more successful *now* in the cure of insanity than formerly. But, from all quarters, we hear of the frequency of *relapses*. Let it be remembered, however, that people who have suffered an attack of any disease—for instance, pneumonia, hepatitis, apoplexy, &c. are more easily thrown into a similar disease, in future, by the same causes, in consequence of certain organs being left in a weakened state. But we do not call these *relapses:* they are *new* attacks, not sequelæ of the former ones. The same observations apply to insanity, and with increased force, since the range of moral and physical causes to which a recovered maniac is exposed, far exceeds that of any other disease, while the patient is generally much less on his guard against the causes which lead to a repetition of the attack.

§ VII. *Pathology.*

"At this word, our readers may fondly entertain the expectation that we can inform them of the long-sought seat of insanity. But, alas! we are far from being able to satisfy them; for dissection has hitherto proved a steril soil, in this respect! The phenomena observed by Willis, Mangetus, Bonetus, Morgagni, Gunz, Meckel, Greding, Vicq-D'Azyr, Camper, Chaussier, Gall, &c. have led to nothing but negative

and contradictory results. In this investigation, it is of the highest importance to distinguish the *effects* of those diseases which occasioned the *death* of the patient, from those which occasioned the *derangement* of the mind. It is by confounding these together, that there has arisen such contrariety of opinion respecting the pathology of insanity. The details of my researches *post mortem*, would be too long for insertion here; and I shall content myself with presenting the result or conclusions drawn from dissection up to the present day. I do not pretend that these corollaries possess a mathematical accuracy; but I am convinced that they will be found, in general, correct.

"1. Vices of conformation, in the *skull*, are peculiar to idiotism, futuity, and cretinism.

"2. Organic lesions of the *encephalon*, or its envelopes, are only observed in those cases of mental derangement complicated with paralysis, convulsions, epilepsy, or where the patient has sunk under diseases with symptoms analogous to the above.

"3. Those effusions within the cranium, whether sanguineous or serous, which we sometimes observe, are the *effects* of insanity, or rather of those diseases which destroyed the life of the insane.

"4. The changes of structure in the thorax, abdomen, or pelvis, are evidently, in many cases, totally unconnected with the mental derangement. They sometimes indicate the *remote* cause or seat of the malady, but never the *immediate*.

"5. Every kind of organic lesion observed in the bodies of the insane, has been also found in the bodies of those who never evinced a symptom of insanity.

"6. In numerous and accurate dissections of the insane, no alteration whatever from the healthy structure, could be discovered.

"7. Dissection has shown every portion of the encephalon disorganized, suppurated, or otherwise destroyed, without any derangement of the understanding.

"8. From all these premises and facts, we are authorized to infer that, the *brain* being only the *principal* focus of sensibility, there are cases of insanity dependent merely on lesion of its *vital powers:* that there are other cases, where the disease has *not* its seat in the brain, but in various other foci of sensibility, placed in different regions of the body: but, in all cases, that it is a *corporeal* disease, whether the lesion be organic, or only functional."

§ VIII. *Treatment.* There are three general indications to be kept in view, in the treatment of insanity; namely, to remove the physical disorders, check the aberrations of the understanding, and calm the troubled passions.

Among the ancients, helebore was the principal remedy. Accident recommended the shower-bath; and after the circulation of the blood was discovered, venesection was carried to extravagance. In England, the treatment of insanity was long kept a secret; but M. Pinel changed the lot of the insane, broke their chains, and reduced their management to a rational system.—Since that period, confidence has been inspired by increased success.

According as the causes of mental derangement are of a general or local, a physical or moral nature, so must the treatment be,

general or local; physical or moral. And as there is often a combination of causes, so must there also be a combination of remedial measures. *There is no specific treatment of insanity.* In no two individuals are the functional or organic lesions, the symptoms, and the character of the disease precisely alike. Hence, each particular case requires a thorough investigation, before the treatment adapted to it, can be fairly laid down. On this account, we must confine ourselves to such general rules of treatment as are more or less adapted to all; leaving the particular application of them to the discretion of the practitioner, after he has studied the individual case.

We have seen that lesion of the sensations, and of the power of association, through defective attention, produced and kept up the hallucination, as well as the perversions of the passions. Every thing, therefore which can modify the thinking faculty, and control the passions, is an object of the *moral* treatment.

The first question bears on *separation* of the insane from friends and home. On the necessity of this measure, the English, French, and German physicians are unanimously agreed. Willis observed that foreigners were more certainly cured in England than the natives. We find the same thing in France. Strangers, sent to Paris for treatment, are more readily restored to reason, than inhabitants of this city.

"The first effect of separation is to produce a train of new sensations, excited by new objects; and thereby to dissever, more or less, the series of incongruous ideas, from which the patient was previously unable to extricate himself. The consequence is, that he becomes, at this period, more accessible to advice or remonstrance; in short, there is an evident remission of the hallucination, which should be immediately seized on by the physician, for the purpose of gaining the confidence of the patient."

When the insane patient is placed in a proper receptacle, he ought to be under the guidance of one, and *only one* person—and that a physician. Reil, and some others who conceive that there should be a physician, a psycologist, and a moralist in superintendance on the insane, have no practical knowledge of the subject, and know nothing of the inconvenience, not to say mischief, attending such a triumvirate power. To the medical chief, the domestic attendants must exhibit perfect examples of deference and obedience, for the imitation of the patient; while they themselves wear the appearance of strong delegated power, which will generally render the exercise of it unnecessary, by convincing the insane that all idea of resistance is vain. Interviews with parents and friends must be very cautiously permitted—for the deranged are great children, and children too, whose false ideas have taken a wrong direction.

"Confined thus to a regular life, and an exact discipline, they are naturally led to reflect on this change in their situation; while the necessity of dwelling among, and submitting to the control of strangers, is to them a powerful stimulus to regain their lost freedom and reason."

Some of the insane, on being transferred to a strange place, believe themselves abandoned by their parents and friends. Let the balm of consolation be then poured into their breasts—let them be promised every assistance in once more uniting the bonds of social existence, and they will pass from the gloom of despair to the sunshine of hope. This contrast of sentiment, arising out of the presumed abandonment of friends, and the soothing attention of strangers, produces an internal conflict, from which reason sometimes comes forth victorious. Others imagine that they are conducted to these strange habitations to be delivered up to their enemies, or to be sacrificed. If these fears can be conquered by the kind, affable, and humane conduct of those around them, a recovery may be confidently expected.

"The judicious exercise of the faculties of the alienated, conduces much to recovery. This must be done by directly excited the *attention* of the insane—by presenting new objects to their contemplation—by giving way in some measure, to their hallucination. If, by these means, their confidence can be gained, the cure is almost certain."

The *passions* of the insane must be carefully managed. The proud and rebellious passions and emotions must be tamed and kept in subjection, while the timid and melancholy are to be dissipated by encouragement. The art of inspiring *fear* is not of easy management; and ought never to be confided to servants. Many maniacs are incapable of sleeping, while under the depressing influence of fear. This may often be obviated by causing some person to sleep in the room with them, or by leaving a light in their chamber.

It is sometimes proper to substitute a real for an imaginary grievance. Thus a melancholic is devoured with *ennui* in the midst of the pleasures and enjoyments of life. If we withdraw him from his usual habits, and impose on him *real* privations, he will then suffer *real* ennui, which will prove a powerful mean of cure.

"Another believes himself abandoned by his friends, though they are all endeavouring to contribute to his happiness. Deprive him of every testimony of their affection, then he awakes to a sense of his *real* loss, and this is one step towards recovery. Even *physical* sufferings occasionally divert the malady from its mental seat, and relieve the moral evil."

Sometimes the excitive passions, as love, ambition, may be dexterously brought to bear on insanity.

"A melancholic was in a state of great despondency. He was told that he had a lawsuit on hand. The anxiety to defend his suit soon

restored his intellectual energy.—A soldier became deranged in mind. He was told that the campaign was about to open. He demanded permission to rejoin his regiment—was forwarded to head quarters, and arrived there in perfect sanity. In short, the examples are innumerable, of the vast influence of our moral over our physical nature. But the character, disposition, and history of each individual, must be carefully studied, in order to manage the moral treatment with success. Music, well managed, acts with considerable power both on the moral and physical frame. There should be but few instruments, the music placed at a distance, and composed of airs with which the patient was familiar in youth; or which he relished before the mental derangement."

Travelling is a useful remedial measure, in many cases. M. Esquirol has always found the complaint mitigated after a long journey, especially if attended by difficulties and privations, and performed through a strange land, where the attention of the insane was strongly excited.

Travelling is also salutary, in a physical point of view. It rouses the torpid functions, particularly those of the abdominal viscera—conduces to sleep—improves the digestion and the secretions. It is, above all, a useful mean of securing convalescence and recovery. Such are the general indications of the moral treatment of the insane. They have for their final object—to force the *maniac* to live *within* himself—the melancholic *without* himself.—"Ils ont pour but d'obliger le maniac à vivre *en lui-meme*, tandis qu'il faut faire vivre le melancholique *hors de lui.*"

Hygiene and Pharmaceutics. The insane should have the benefit of free air and ample exercise. Those who are taken ill in a hot country recover best in a cold. Nostalgics, on the other hand, cannot be cured without return to their native soil.

The clothing of the insane, especially of the melancholics, should be warm, so as to encourage and maintain the insensible perspiration. It is an error to imagine that the insane should be deprived of fires, and kept in cold habitations. The administration of food requires much attention. The insane generally devour their victuals with great voracity, and without sufficient mastication. This injures their digestion, and keeps up a source of irritation in the whole line of the alimentary canal. Thirst is also common; therefore, the patient should never be without drink. Wherever there is excitement, the food must be unirritating and small in quantity. Constipation being a very common attendant, the bowels should be seduously attended to; and all the secretions and excretions promoted by every possible means. For these purposes, exercise in the open air, active or passive, must form a *sine qua non* in the treatment. Every one knows the story of the Scotch farmer, who acquired great celeb-

rity in the cure of the insane. He first took them out to walk with them in his fields, then contrived to quarrel with them, beat them soundly, and afterwards yoked them to the harrow, and made them work like horses!

Gardening is an occupation universally applicable to the lower orders of society, and of the greatest use in this complaint. In the upper walks of life, we are obliged to substitute the promenade, music, reading aloud, &c.

To apply *medicines*, with effect, we must first unravel the whole history of the individual and the complaint—ascertain the causes, general and local, which have induced it—the seat, or principal organ affected—whether it is the physical which has first acted on the moral, or the moral on the physical system. What infinite mischief has been done by *Routinists*, in this disease; who, in the sweeping term "insanity," could see but a *single* affection—derangement of the mind!

When we have combated the general dispositions, and the effects of particular morbific causes, and still the mental alienation continues, then we are authorized in attempting more specific means of treatment. Till then we must vary, incessantly vary, our remedial measures, according to the species of insanity with which we are engaged. We shall here confine our remarks to certain medicines which have been deemed heroic in this complaint.

Baths have been administered to the insane in every way, and at all temperatures. The warm bath is, upon the whole, the most useful. Patients of a thin, nervous, and irritable constitution, may be kept a considerable time in the water, with great benefit. When there is a strong determination to the brain, the head should be kept encircled with cloths wetted with cold water, while the body is immersed in the warm. Excepting where the patient is young, robust, and complaining of internal heat, the *cold* bath is rarely useful. Where the patient's constitution is debilitated by unmanly excesses, the mere *plunging* in cold salt water is occasionally serviceable. Cold *affusion* from a cock or funnel, is sometimes proper; but requires great caution. It is most adapted to young and unruly patients, with determination to the brain.

At the commencement of insanity, where there is headache, redness of eyes and face, throbbing of the carotids, &c. *cold*, locally applied to the head, after leeching or cupping, while irritating pediluvia are also employed, produces salutary effects. The bowels should be kept clear by daily glysters of water alone, or

water containing purgative ingredients. This measure is too much neglected in England.

Emetics are entitled to considerable rank, especially in melancholia, and where diminished sensibility and torpor prevail. They are dangerous, however, in opposite states of the system, and where there is erythism of any organ or part.

Purgatives are exceedingly useful, especially those which act on the biliary secretion, and tend to produce the hæmorrhoidal movement and discharge. Purgatives sometimes produce irritation in the system, and interrupt the free functions of the skin. Whenever this is perceived; they should be alternated with the warm bath. A certain degree of irritation in, and determination to, the abdominal viscera, from purgatives, is, however, very useful; and it is, in this way that helebore, gamboge, and other drastic cathartics, have acquired celebrity.

" *Blood-letting* was formerly carried to a most culpable excess. It is indispensible in plethoric subjects, and especially where any long-accustomed hæmorrhage or other evacuation has been suddenly suppressed; but otherwise, *local* blood-letting may almost entirely supersede the lancet in insanity."

Camphor, musk, tonics, antispasmodics, mercury, &c. are all occasionally useful, in individual cases, especially where the *general* indications have been previously attended to; but they are incapable of universal or indiscriminate application.

Opium. As maniacs sleep badly, opium and other sedatives have been employed; but they are now proscribed by unanimous consent, as dangerous remedies. Regimen and exercise are the only somniferous measures which can be safely recommended. They are generally successful too.

" Setons, blisters, and counter-irritants, are useful where there has been a metastasis: in monomania, with stupor; in puerperal mania, and sometimes in dementia, or fatuity. It has been recommended to blister, or otherwise excoriate the whole surface of the head. I confess that such measures have not succeeded in my hands. They augment the erythism, torment the patient, increase his irritability, and convince the insane that he is a victim to our cruelty. The swing is occasionally useful in refractory cases."

In respect to the *prevention* of insanity, much might be done by avoiding intermarriages with the insane; by directing the education of youth on stricter principles of religion and morality; by indulging less the caprices and whimsical desires of children, which indulgence unfits them for the rugged journey of life; by not forcing too early the organ of the mind with tasks and exertions beyond its power; by training youth in early regimen and temperance; and, above all, by repressing and controlling each unruly passion as it developes itself from childhood upwards.

In presenting our readers a portrait of this distinguished foreigner's opinions and practices in insanity, we hope and trust that we do a greater service to the cause of medical science, in this country, than by collecting a mass of ephemeral cases, and fleeting speculations, most of which expire in the very cradle of their existence, and few of which have substantial attractions for re-perusal or reference. Under this conviction we shall make a point of introducing classical and standard articles of Foreign Medical Literature, from time to time, to the English reader, through the medium of this Journal.

Principles of Military Surgery, comprising Observations on the Arrangement, Police, and Practice of Hospitals; and on the History, Treatment, and Anomalies of Variola and Syphilis. Illustrated with Cases, Dissections, and Engravings. By JOHN HENNEN, M. D. F. R. S. E. Deputy Inspector of Military Hospitals. Second Edition, with numerous Additions. One volume Octavo, closely printed, pp. 580, with six Plates. London and Edinburgh, 1820

[From the London Medico-Chirurgical Review, of Sept. 1820]

In the monthy Series of this Journal, we gave a full account of the first edition of the valuable work now before us. In this edition, the quantum of matter is nearly doubled, by means of concentration and small type, while the price is but little increased. As it now stands, there is no other work on Military Surgery, in the English language, at all to be compared with Dr. Hennen's volume. This distinguished medical officer has added to an extensive stock of personal experience and observation, a vast mass of important facts and observations, from his military, naval, and civil brethren, combined with a selection from the best authors of our own and other times, all bearing on military surgery in particular; but, in truth, embracing surgery in general, and elucidating all its leading principles and operations. Such a work must prove an invaluable acquisition to the practitioners in the army and navy; and, indeed, to surgeons in general, to whom we can safely recommend it as a standard production.

In the present article, we shall confine ourselves to the subject of syphilis—a subject which so much divides the sentiments of professional men, and on which Dr. Hennen, from his official situation, and his access to authentic documents, is particularly well qualified to write. Our own experience in the non-mercurial treatment of syphilis having been very limited, we shall en-

deavour chiefly to exhibit a full analytical view of our able author's paper, leaving it to our readers to judge and act for themselves, after weighing the evidence here adduced.

Dr. Hennen enters into a pretty extensive historical sketch of the various other remedies besides mercury, which have been extolled, from time to time, as specifics. This, he thinks, can only be accounted for, by supposing that the disease was curable by the efforts of the constitution alone; otherwise, inert and trifling medicines could never have acquired the reputation of being anti-syphilitics. But there is another point of view, in which the subject may be taken, and in this we are strongly disposed to coincide with Dr. Hennen.

"It may be, that such an alteration has been produced in it either from the effects of remedies, or by natural causes, as seriously to influence the results of our treatment at the present day. The analogy of leprosy and of scurvy, which at one time raged throughout Europe, but are now almost unknown, is strongly in favour of the supposition of a change of character in syphilis; we have also direct testimony, which shows that its symptoms have become milder and more tractable." 496.

Dr. H. quotes several authorities for this supposition; among others, the learned and indefatigable Astruc himself, who, nearly a hundred years ago, says—

"I have, by careful and repeated observation, found the venereal disease daily to grow milder; it may, perhaps, be more frequently contracted than formerly, yet its rage is less violent, its symptoms are not so many, so painful, nor so difficult to be cured; it yields more readily to remedies properly applied; and, in a word, seems by little and little to approach towards its close."*

"The following note, containing very curious matter, we shall extract from Dr. Hennen's work.

"From some extracts from the rare volume of Ruy Diaz de Isla, "Contra las Bubas," Salamanca, 155—with which Dr. Thomson, Professor of Military Surgery, has favoured me, I find that, in no town in Europe, of one hundred inhabitants, were there fewer deaths than ten on the first appearance of syphilis among them. Now, if we recollect that the numerous monks and nuns spread the disease through all classes of society, it is not an extravagant calculation, that fifty out of the hundred were poxed. This will give us one death in five: the remaining four survivors must have owed their lives to the "methodical or rational" cure. I doubt whether the mortality was greatly less than this, while the gross abuses of mercury prevailed, under the form of daubings, with four lb. of quicksilver to two lb. of lard, applied over the whole body. "Cum quo (says Torella) infinitos interfecerunt, interficiuntur homines, non moriuntur." (Luisin, tom i. p. 528.) But, putting the mortality out of the question, Hutten expressly states, that hardly one in one hundred was perfectly cured, the disease re-

* Astruc, lib. 1, cap. 13. Hennen, p. 497.

turning upon them again, as it did on himself after eleven salivations. (See Ulrichus de Hutten de Morbo Gallico apud Luisinum, cap. 4. tom. i. p. 281 and 283;) but after guaiacum was introduced, only one individual died in Germany while under its use, and his death was attributed to excess in venery." 498.

If the latter part of the above passage be true, (which we much doubt) then guaiacum, as well as syphilis, has lost some of its pristine powers.

Speaking of the opinion entertained by several of the present day, and once prevalent all over Germany, that the diseased state of the bones, in protracted syphilitic cases, is the effect of mercury, and not of the venereal virus, Dr. Hennen remarks,

"It becomes a point well worthy of inquiry, whether mercury produces diseases of the bones where a predisposition to these diseases does not exist. I am well convinced that the carious affections of the bones, which are so common in persons treated by long mercurial courses, have proceeded, not from the disease, but from the remedy rapidly and irregularly thrown in while periostitis existed; as a proof of which, I have not seen a single case of carious bone in the military hospitals since the non-mercurial treatment was adopted, except where mercury had formerly been used, so that those gentlemen who so kindly and compassionately harangued on falling noses and rotten bones, have displayed their sensibility in vain." 506.

Upon this we can only remark, that as we have seen mercury used to a great extent, and among whole masses of men of various constitutions, without these diseases of the bones supervening, we cannot but suspect that the syphilitic virus is the principal cause of such formidable affections.

The observation of Leo Africanus, nearly three hundred years ago, that lues venerea undergoes a cure by change of climate in Africa, without the employment of mercury or other medicine, is confirmed, Dr. H. thinks, by the recent traveller, Horneman; but we confess, that the extract brought forward from this gentleman, has nothing very satisfactory for our minds.

"Dr. Mitchell, of New York, in the Medical Repository for 1799, assures us, that a great number of venereal ulcers were cured in the hospitals of that city, by the local application of potash, or salt of tartar, from which fact he draws the very natural conclusion, that neither nitrous acid nor mercury produced any *specific* effect upon these ulcers." 508.

Our author, after enumerating the various morbid affections produced by mercury, when either profusely used, or in unfavourable constitutions, observes:—

"While I have thus enumerated many of the ill effects produced by mercury when it acts as a poison, I must give my strongest testimony to the admirable results which proceed from its judicious use in persons not constitutionally disposed to be injured by it, and who do not lead profligate lives, or are not exposed to the foul air of hospitals fully saturated with its fumes." 512.—"Of its unquestionable efficacy there

can be no doubt; but its indiscriminate employment in every case, whether old or recent, suspicious or confirmed, and without any view to the patient's diet, or his general health, has produced the most dreadful consequences." 513.

This, indeed, we have all along considered to be the real state of the case. The *abuse* of the medicine is to be deprecated; not its rational use. Dr. H. properly observes, that the precepts of Hunter, Abernethy, Pearson, Carmichael, and several others, have reduced the quantity of mercury formerly given in syphilitic affections.

"But it remained for the inquiry which is at present prosecuting in the military hospitals, to show, that even these bounds are too extensive, and that the practitioner has, in a vast number of instances, the option whether to defer its use, to limit it, or to omit it altogether.—Settled as it now is, beyond a doubt, that syphilis does not run on uninterruptedly to a fatal event, if not checked by mercury, that practitioner cannot be admitted to do full justice to his patient, who does not avail himself of the fact—to his own judgment must be left the extent to which he may be pleased to do so."

Dr. Hennen candidly confesses his inability to point out "any invariable characteristic symptom by which to discriminate the real nature of the primary sore," while "we are equally at a loss in many of the secondary symptoms."

"It would be by no means difficult to show that the high round edge, the scooped or excavated sore, the preceding pimple, the loss of substance, the hardened base and edge, whether circumscribed or diffused, and the tenaciously adhesive discharge of a very fetid odour, are all observable in certain states and varieties of sores unconnected with a venereal origin. The hardened edge and base, particularly, can be produced artificially, by the application of escharotics to the glans or penis of a sound person; and if any ulceration or warty excrescence previously exists on these parts, this effect is still more easily produced." 517.

What, then, are the practical steps to pursue in diseases produced by sexual intercourse! We shall lay the precepts of our able and experienced author before the reader.

"1st. In every primary ulcer, I would give up the idea of using mercury at first, treating it as if it were a simple ulceration, by cleanliness, rest, and abstinence, and applying to it the most simple and mildest dressings.* If the sore did not put on a healing appearance in a reasonable time, the extent of which must depend on the circumstances of the patient, I should make use of more active dressings. But if, beyond all calculation, it remained open, I should certainly not sacrifice every consideration to a dislike of mercury, knowing how many persons have been seriously benefited by a judicious and mild administration of that remedy. 2d. The same principles which guide me in the primary ulcers, would have the same, if not greater force, in the case of buboes. In their irritable state, I consider mercury as altogether inadmissible.

* A very early application of lunar caustic will often supersede all other remedies.

Moderate pressure, and cold applications, will often disperse them in their commencement, aided by Girtanner's plan of frictions of volatile liniment on the thigh of the affected side. If they suppurate, opening with the kali purum is by far the best plan; they then heal from the bottom. 3d. The cutaneous eruption I would treat at first on the same general principle, but I should not very long postpone the employment of the mildest mercurial alteratives, aided by warm bathing and sudorifics. 4th. In the affections of the throat I would be more guarded than in any others in the employment of mercury, until all inflammatory disposition was removed; after that, I have seen them yield, as if by magic, so soon as the local effects of the mercury on the parts within the mouth became obvious; but before the inflammatory symptoms were subdued, I have seen a vast number of instances where irremediable mischief has been done. 5th. In the bone cases, during the stage of periostitis, or any approach towards it, local bleeding, blistering, warm bathing, and abstinence, are the proper remedies, to the entire exclusion of mercury. When inflammation is subdued, that remedy may be tried in moderation; but if caries exist, I hold it to be highly improper under any form." 519.

Our author states, that so far has delay been from injurious, in the cases under his inspection, that the sanative powers of mercury were remarkably assisted by the preparatory regime of cleanliness, rest, rigid abstinence, purgatives, sudorifics and venesection, where deemed necessary. This was particularly remarkable where the genital ulcerations were irritable and extensive, threatening the destruction of the organ; or where the throat was severely affected. The extent of the delay in administering mercury, must depend on the individual case. In delicate phthisical habits there is no necessity for haste.

"At the same time, no person in private practice, whose constitution could tolerate mercury, would willingly continue to bear about his person those suspicious-looking stains and eruptions on the skin, which a judicious employment of that remedy so often relieves." 519.

While, therefore, great pains were taken to ascertain how far mercury could be safely dispensed with in the treatment of syphilis, no patient's constitution was involved, nor practitioner's character compromised in the experiment.

"In no case, (says Dr. Hennen) I most firmly believe, has the health of an individual been wantonly trifled with, nor has the utmost professional exertion been spared to elucidate the history of this most interesting and most common of all military diseases, even in the persons of some of the professional men themselves."

This, we have the strongest reason to believe, is strictly fact. That any *external* applications of mercury could have had any constitutional effect on the disease, is quite untenable; indeed, cold water alone was used by a great many of our military surgeons. It is well known that the appearance of genital ulcerations is much modified by their locality. This should be always borne

in mind. The following circumstances were generally remarked in the military hospitals.

"1. Ulcers on the external integuments have generally had round callous edges, level surfaces, but little induration of base; they were less irritable than others, became sooner clean, and healed uniformly, but slowly. 2d. Ulcers on the internal membrane of the prepuce have been generally either superficial or elevated; their surfaces covered with a light-coloured slough, or of a bright red, with a villous appearance; their edges either regularly defined, or spread out like excoriations; their bases have been, in general, but little indurated, but when the ulcers have spread out, they have sometimes acquired a cartilaginous hardness, and have been extremely difficult to heal. 3d. Ulcers immediately behind the corona glandis have been, in general, highly irritable, deep, scooped, indurated in their edges and base, foul, with membranous bridles, running across them, throwing off a perceptible slough, but, if mildly treated, soon healing after that event. 4th. Ulcers on the frœnum have generally followed lacerations of that part, have had considerable induration of base, and have been generally slow of healing. 5th. Ulcers of the glans have been generally excavated, but with little hardness of base, quickly throwing off a slough, and then healing rapidly." 524.

Dr. Hennen mentions a curious fact, which should be held in memory, especially by the military and naval surgeon. It is this—that the hardened edge and base *naturally* attending some ulcerations "may be artificially produced by the application of the kali purum to a sound man;" and this sore "is not to be distinguished from chancre by a person not acquainted with the circumstance." Even the specific distance (as it has been called) of the hardness can be increased or diminished, by proper management of the caustic.

Dr. Hennen finally comes to the conclusion, that primary sores on the genitals, of whatever description they may be, can be healed without the employment of mercury; nor has he met with any thing to make him question the propriety of making the trial. The same observation, to a certain extent, is applicable to the secondary symptoms that have succeeded the non-mercurial treatment; but here our author cannot offer such positive testimony to the expediency of abstaining from mercury altogether.

"The facts at present ascertained are these:—Secondary symptoms occur more frequently, and appear at an earlier and more determinate period than when mercury had been used; but they, in many cases, have gone off as soon, never, as has been supposed, proceeding from bad to worse, or from one succession of parts to another in unabated violence; on the contrary, they by no means exhibit the same violent and unrelenting symptoms which we have observed, in many instances, where mercury has been used; the eruptions have not run into ulceration; they have not formed into large scales or extensive blotches; nor have the bones of the nose, or of other parts, been in any instance affected with caries. I cannot take upon me to assert, that these events

will not occasionally take place, but in the numerous cases which I have watched with the utmost anxiety, I can aver that they *have not.*" 527.

Eruptions on the skin, Dr. Hennen thinks, have been more frequent since the non-mercurial treatment has been in use; but the general health did not appear to suffer more than when similar eruptions succeed the mercurial treatment, and they all gradually, though sometimes slowly, disappeared without the use of mercury. In some cases of the cutaneous eruptions, Dr. H. observed considerable benefit from the mineral acids, used both internally and externally. In no case were the bones of the nose affected, though occasional instances of periostitis, and of pains and swellings of the bones of the cranium, and of the extremities, were met with. Only two *unequivocally syphilitic* nodes were observed. One of these gave way to blisters and sarsaparilla; the other was treated with mercury.

We shall now introduce a series of analytical tables, drawn by our most intelligent and indefatigable author, from the practice of the regimental surgeons, in those corps of the army which were quartered in Scotland, during a considerable portion of the time that he held the superintendence of that part of the united kingdom.

Analytical Return of Venereal Diseases, treated without Mercury, in the Military Hospitals of Scotland, under the Superintendance of JOHN HENNEN, M. D. Deputy-Inspector, from June 20th, 1817, to December 20th, 1819.

PRIMARY AFFECTIONS.

1. *Description of Cases that have been Treated.*

A. Affections possessing the true Hunterian character.	*a.* Ulcers only			109	
	b. Buboes succeeding to Ulcers.	*α.* Before admission into hospital	48		
		β. After admission into hospital	10		
		γ. Of which were discussed	42	58	
		δ. Of which suppurated	15		
		ε. Under cure at the date of last return	1		167
B. Affections of various kinds not possessing the true Hunterian character.	*a.* Ulcers only			154	
	b. Buboes succeeding to ulcers.	*α.* Before admission into hospital	72	84	
		β. After admission into hospital	12		
		γ. Of which were discussed	53		
		δ. Of which suppurated	31		
	c. Buboes without previous ulcer			2	240
Total number of Primary Affections treated					407

2. *Time required for the Cure.*

A. OF ULCERS.

Hunterian.		Non-Hunterian.	
The following number of cases were cured.	In the following number of days.	The following number of cases were cured.	In the following number of days.
36	From 5 to 10	63	From 3 to 10
19	11 20	40	11 20
42	21 30	43	21 30
13	31 40	10	31 40
13	41 50	5	41 50
5	51 60	1	51 60
1	71 80	1	61 70
2	91 90	2	71 80
4 under cure at the date of last return.		4	81 90
		1	93
		1	109
		1	113
		18 under cure at date of last return.	

B. OF BUBOES ENDING IN RESOLUTION.

Buboes following Hunterian Ulcers.		Following Non-Hunterian Ulcers.	
The following number of cases were cured.	In the following number of days.	The following number of cases were cured.	In the following number of days.
5	From 5 to 10	10	From 2 to 10
8	11 20	18	11 20
15	21 30	13	21 30
4	31 40	4	31 40
8	41 50	4	41 46
2 under cure at the date of last return.		4 under cure at the date of last return.	

C. OF BUBOES ENDING IN SUPPURATION.

Buboes following Hunterian Ulcers.		Buboes following Non Hunterian Ulcers.	
The following number of cases were cured.	In the following number of days.	The following number of cases were cured.	In the following number of days.
2	From 30 to 40	1	From 7 to 10
3	41 50	2	11 20
2	51 60	5	21 30
2	61 70	3	31 40
1	77	4	41 50
1	92	3	51 60
4 under cure at the date of last return.		1	71 80
		3	91 100
		2	101 110
		2	111 113
		1	179
		4 under cure at the date of last return.	

Note. In the Table A. of Ulcers, the period of cure of some of these affections is not specified, as it was not fully ascertained from some corps; but in no case did it extend beyond the average period of the cases which are specified in the Table.

SECONDARY AFFECTIONS.

1. *Description of Cases treated.*

A. Succeeding the Hunterian ulcer.	*a.* Eruptions only.	α. Tubercular	6	15	
		β. Exanthematous	5		
		γ. Pustular	2		
		δ. Tubercular and Scaly	1		
		ε. Tubercular and Vesicular	1		
	b. Eruptions combined with sore throat.	α. Tubercular	2	4	
		β. Tubercular and Scaly	1		
		γ. Tubercular and Exanthematous	1		
	c. Tubercular Eruption combined with Iritis			1	
	d. Tubercular and Papular Eruption, combined with Iritis, Periostitis, and Sore Throat			1	
	e. Tubercular and Exanthematous Eruption, combined with Periostitis			1	
	f. Sore Throat only			1	
	g. Exostosis only			1	
					24
B. Succeeding ulcers not Hunterian.	*a.* Eruptions only.	α. Pustular	6	12	
		β. Exanthematous	3		
		γ. Tubercular	2		
		δ. Tubercular and Scaly	1		
	b. Eruptions combined with sore throat.	α. Exanthematous	3	7	
		β. Tubercular	2		
		γ. Papular, Scaly, and Tubercular	1		
		δ. Pustular and Tubercular	1		
	c. Sore throat only			3	
					22
Total number of Secondary Affections treated					46

II. *Period of Occurrence, and Time required for the Cure.*

Description of Primary Affections to which they succeeded.	No. of Cases.	Description of Secondary Affections.	Period of occurrence after Primary Affection.	Time required for the Cure.
A. Succeeding the Hunterian Ulcer.	6	Tubercular Eruption - - -	From 7 ds to 6 ms	From 10 to 60 ds
	5	Exanthematous Eruption - -	—— 28 ds to 6 ms	——3 to 42 ds
	2	Postular Eruption - - - -	—— 21 ds to 38 ds	—— 18 to 43 ds
	1	Tubercular and Scaly Eruption	40 ds	25 ds
	1	Tubercular and Vesicular Eruption - - - - - - - - -	22 weeks	27 ds
	2	Tubercular Eruption with Sore Throat - - - - - - - -	—— 46 to 75 ds	—— 31 to 240 ds
	1	Tubercular and Scaly Eruption with Sore Throat - - -	5 weeks	66 ds
	1	Tubercular and Exanthematous Eruption with Sore Throat	2 ms	60 ds
	1	Tuberculur Eruption combined with Iritis - - - - - -	14 weeks	45 ds
	1	Tubercular and Papular Eruption, combined with Iritis, Periostitis, and Sore Throat	45 ds	84 ds
	1	Tubercular and Exanthematous Eruption, combined with Periostitis - - - - - - -	5 ms	28 ds
	1	Sore Throat only - - - -	5 weeks	33 ds
	1	Exostosis only - - - - -	74 ds	14 ms
B. Succeeding Ulcers not Hunterian.	6	5 Pustular Eruption - -	From 49 to 320 ds	From 19 to 58 ds
		1 Pustular Eruption - -	5 ms	Under cure date of last return
	3	2 Exanthematous Eruption	——90 to 240 ds	From 28 to 120 ds
		1 Exanthematous Eruption	298 ds	Under cure date of last return
	2	Tubercular Eruption - - -	——23 to 122 ds	From 26 to 35 ds
	1	Tubercular and Scaly Eruption*	19 ms	Under cure date of last return
	3	1 Exanthematous Eruption with Sore Throat - - -	Simultaneous with the Ulceration	29 ds
		1 Exanthematous Eruption with Sore Throat - - -	4 weeks	42 ds
		1 Exanthematous Eruption with Sore Throat - - -	59 ds	Under cure date of last return
	2	Tubercular Eruption with Sore Throat - - - - - - -	——75 to 91 ds	From 14 to 31 ds
	1	Papular, Scaly, and Tubercular Eruption, with Sore Throat*	20 ms	Under cure at the date of last return
	1	Pustular and Tubercular Eruption with Sore Throat - -	68 ds	
	3	Sore Throat only - - - -	——50 to 77 ds	From 43 to 63 ds

* Primary Affections Cured by Mercury at a former Period.

To complete our paper on the subject, we shall here introduce the following important and highly interesting document circulated by the Army Medical Board among the surgeons of the army at large, and which cannot but be read with the deepest interest by every private practitioner.

(COPY) "*Army Medical Department,*
2d April, 1819.

"*Circular.*

"ON SYPHILIS.

"In transmitting the following summary of the conclusions on the question of syphilis and its treatment, we have to assure all that it may be considered as an unprejudiced statement drawn up from the answers *alone* of the regimental surgeons, to the queries transmitted by us to them in December last.

"*Without Mercury.*

"1st. That since December 1816 to December 1818, there appears to have been treated for primary venereal ulcerations on the penis (including not only the more simple sores, but also a regular proportion of those with the most marked characters of syphilitic chancre, as described by Hunter and other writers) 1940 cases.

"2d. That of these 1940 cases so treated, 96 have had secondary symptoms of different sorts.

"3d. That in these 96 cases of secondary symptoms following sores treated without mercury, it was deemed necessary to have recourse to mercury for a cure of twelve of them; for which change, the following different reasons are assigned, in different cases, by the surgeons who treated them.

"*a.* On account of sloughing ulcers in the throat.
"*b.* The protraction of cure beyond the third week.
"*c.* Because the general health seemed to suffer.
"*d.* With a view of expediting the cure.
"*e.* The re-appearance of eruptions, or aggravation of symptoms.

"*Note.*—In several of these 12 cases, alterative doses of mercury were sufficient to effect the cure.

"4th. That in 1940 cases of primary symptoms treated without mercury, (as described in par. 1st.) its use was resorted to in 65 of them; the reasons assigned being as follows:

"*a.* An indisposition to yield to the local application in three weeks.
"*b.* The sore spreading.
"*c.* The appearance of fresh sores.
"*d.* Buboes suppurating, and not disposed to heal.
"*e.* The general health appearing to suffer.
"*f.* A belief that the constitution became affected from the continuance of the sores.

"5th. That these 1940 cases, treated, as here above stated, are now 'recovered of their venereal complaints,' and either doing their duty as soldiers, or have been discharged, for military reasons, totally unconnected with venereal disease.

"6th. That the principal remedies employed have been (speaking in general terms, and with reference to primary sores) confinement to bed in many cases, in all to hospital, spoon diet, occasionally general bleeding when inflammation ran high, (in six or eight cases,) purga-

tives, antimonials, pretty generally emollient soothing applications in the first instance, generally cold or warm water, (the latter, frequently injected between the prepuce and glans,) and the first externally applied, the water frequently mixed with the liquor plumbi; in the latter stages, the lotio hyd. submuriat. or muriat. in aqua calcis, lotio sulphat. cupri, argent. nitrat, &c. were employed. With reference to secondary symptoms, when mercury was not had recourse to, purgatives, antimonials, nitric acid, sarsaparilla, guaiacum in substance, or in combination with sarsaparilla, warm bath, nitro-muriatic acid bath, gargles when the throat is affected. In nodes, fomentations, scarifications, leeches, and blisters.

"7th. That the average period required for the cure of primary symptoms without mercury, when bubo did not exist, has been twenty-one days; with bubo, forty-five days.

"8th. That the average period for the cure of secondary symptoms without mercury has been from twenty-eight to forty-five days.

"9th. That every man treated without mercury has been fit for immediate military duty on dismissal from hospital.

Mercury.

"1st. That during the period specified before, there appears to have been treated of venereal ulcerations of the penis (the characters given of which do not appear to have been, in any essential degree, different from those treated without mercury) 2827.

"*Note.*—'It may be perhaps well to view these as more generally bearing the character of Hunter's chancre.'

"2d. That of the 2827 thus treated and healed, 51 have had secondary symptoms.

"3d. That there are good grounds for believing, that, in the majority of instances, when secondary symptoms have occurred, where the primary symptoms have been treated with mercury, that the secondary symptoms are more severe, and more intractable than when mercury had not been used for the primary sores.

"4th. That one man treated by mercury for primary sores has been discharged the service on account of the injury his constitution sustained therefrom.

"5th. That another man, after treatment for secondary symptoms by mercury, has been discharged the service in consequence of that complaint.

"6th. That the average period occupied for the cure of primary symptoms without bubo, with mercury, has been thirty-three days; with bubo, fifty days; and that the great majority were unfit for immediate military duty on dismissal from hospital.

"7th. That the average period occupied in the cure of secondary symptoms has been forty-five days.

"*Note.*—'The treatment by mercury is so generally known, that it is deemed useless to describe it in either case.' Much the same local applications were used in the treatment with mercury to the sores, as was described in that without it; perhaps more stimulating and escharotic applications were used, and less attention paid to regimen and diet, when mercury was given, at least less stress seems to have been laid on these."

"*General Observations.*

"1st. From the statement above made it would appear that *all kinds of sores*, or primary symptoms of syphilis, may be cured (as far as a period of nearly two years will warrant the conclusion) without mercury.

"It is considered that the exceptions, noted in paragraph 4th, do not present valid objections to the above conclusions, on viewing the general testimonies on this point; but to the reasons there assigned for the necessity of having recourse to mercury, the most particular attention is required, as on these must the propriety or impropriety of that measure depend.

"2d. To guard against any fallacy in the comparative estimate of time employed in the cure of primary symptoms with and without bubo, it must be noticed that this is only an average statement; in some individual regiments the period required without mercury has been longer than that with mercury.

"3d. That it appears that the frequency or rarity of secondary symptoms would seem to depend on circumstances not yet sufficiently understood or explained, although the following fact would tend to the belief that either the constitutions of the men, or the mode of conducting the treatment without mercury, are the causes that possess the greatest influence in their production.

"In one regiment 4 secondary cases out of 24 treated without mercury supervened. In another regiment 68 cases have been treated within the specified time without mercury, all bearing marks of true venereal disease, (and 28 of these especially selected for their decided characters of chancre;) no secondary symptoms of any kind have hitherto made their appearance, and in all fifteen months have elapsed since they were treated.

"To this circumstance most particular attention is required, both with the view of ascertaining if peculiarity of constitution influences the appearance of secondary symptoms, and of pointing out the necessity of attending to the proper selection of local remedies adapted to the different stages and states of the sore, and to the general treatment of the constitution during the time the patients are in hospital, and that whether mercury be used or not.

"4th. That it appears that no peculiar secondary symptoms are seen to follow from peculiar primary sores.

"5th. It has been remarked, that, in cases healed without mercury, iritis has been frequently observed as a secondary symptom, in some instances by itself, in others attended with eruptions of different kinds. In these instances, mercury has been generally resorted to with success.

"6th. These appearances of primary ulcer, and repeated attacks of eruption, are the diseases which have been most frequently observed to succeed the non-mercurial practice.

"7th. The conclusions arrived at by the additional testimony of many more regiments not included in the number from whence this report has been drawn up, confirm, in every material circumstance, the results stated under both methods of treatment.

"From all that has been reported to us, we see no reason to stop the prosecution of the present inquiry, nor have we any objection to its being continued, but strictly in that spirit of patience, liberality, candour,

and fidelity, that ought to characterize the inquiries after truth; a spirit altogether remote from the precipitancy of innovation, the acrimony of disputants, or the stickler for any particular doctrine.

"1st. It is therefore desired, that the queries heretofore submitted, with these additional points left undecided in this letter, may be considered as the leading objects for consideration in the future prosecution of the subject.

"2d, That every syphilitic case, whether secondary or primary, be duly entered in the register, with full description of the characters of the sores, symptoms, and treatment, so that the results of each half year may be distinctly and clearly stated in the reports required on these occasions; that every man belonging to any regiment, treated in a different regimental hospital to his own, shall invariably be reported through this office to his own regimental surgeon, who will duly register the report, and at the half yearly periods, state the results.

"That it is essentially necessary that each regimental surgeon keep a watchful eye over all men treated without mercury, and frequently examine them, and that whenever answers are required to these queries at a future period, which they will, (say the 1st. January 1820,) the state of the men now reported shall at that time be distinctly referred to, in the same tabular form as was required by the late queries, commencing as before from 20th December 1816.

"We wish it to be distinctly understood, that we do not enforce the non-mercurial plan of treatment in any case, still farther is it from our wish to incur any unnecessary risk or danger to the soldiers, by unnecessary detention from duty, from a protracted treatment without mercury, in those cases where it has been begun. At all times, this is left to the discretion of the surgeon, who, we are persuaded, will act in the most conscientious manner for the good of his patient, and the interests of the service."

(Signed) 'J M'GRIGOR,
'W. FRANCKLIN."

Dr. Hennen here enters into a vindication of the non-mercurial practice as far as regards the recent objection made by Dr. Hamilton, jun. who "conceives that very alarming consequences are likely to arise to children yet unborn, from the practice of the army surgeons." It is well known, as Dr. Hennen remarks, that there are various opinions on the subject of the venereal disease of the fœtus in utero; some contending that the *mother*, not the father, communicates the disease to the embryo; others, that it is the father, not the mother; a third party contend that the infant may be affected by both father and mother; while John Hunter denies the possibility of the fœtus in utero being affected by either. Impressed with the difficulty of forming a decided judgment upon so obscure a subject, Dr. Hennen first states his speculative opinions, and then details such facts as he has been able to collect.

"Unless a man has primary symptoms himself, I apprehend it is physically impossible for him to communicate primary symptoms to a female. Unless a female has primary symptoms, I hold it equally im-

possible for her to have secondary symptoms; and except she has secondary symptoms, she, I apprehend, cannot communicate them to the children in her womb; she may, indeed, as we all know, communicate primary sores to the fœtus in its passage through her vagina." *550.*

Numerous instances, Dr. H. observes, are on record, where women having secondary symptoms, bring forth healthy children; and where fathers who have long had secondary affections beget perfectly sound offspring.

"That children are born with a disease *supposed* to be syphilis, and that this disease is not only fatal to them, but can be communicated by them to their nurses, and be propagated by the nurse to the destruction of more lives is a fact that no man can pretend to deny. The nurse, however, must have a primary sore on her nipple or elsewhere, before she can disease the child. I know it to be a positive fact, that a nurse with secondary symptoms may suckle children with perfect impunity to them."

We ourselves have lately seen some children born with all the appearances of syphilitic defœdations, which defœdations disappeared by mild aperients without any mercury. This, indeed, does not prove that they were but syphilitic affections *in appearance*; it only goes to prove, that these congenital diseases are curable without mercury. The above facts render it extremely doubtful from which of the parties the disease is transmitted; or, indeed, whether it is transmitted by either. Dr. Hennen having circulated a string of queries in Scotland and the northern district of England, relative to this subject, the result is given in a table. The total of children born of parents who had undergone the non-mercurial treatment was thirteen, eleven of whom were born healthy, two were still-born and one has become unhealthy since birth. A woman in the 88th Regt. excited considerable attention in the Ed. Castle Hospital, in consequence of being diseased and pregnant. At the time that the secondary symptoms appeared in her, she was three months gone. She was treated without mercury, and the disease gave way in a little more than three months and a half. She was delivered of a still-born child in the eighth month of utero-gestation, not having felt any movement of the fœtus for two months before. Another woman treated without mercury also aborted of a dead child at the end of the seventh month. In both cases there was considerable abrasion of the cuticle upon the arms and sides, but no distinct eruption. These two cases certainly go towards the corroboration of Dr. Hamilton's doctrine; but two cases can prove little.

In the conclusion of this part of Dr. Hennen's work, he states, from good authority, that the non-mercurial practice has been adopted by some of the naval surgeons with a success even

greater than in the army. In one ship fifty patients were treated without mercury, in one only of whom did secondary symptoms appear, under the form of blotches, and they were entirely removed in the course of eight days, without any mercury internally or externally applied. Other testimonies also, from the officers of the army, have recently come to the knowledge of our author "which still farther tend to confirm the principles which he has advocated."

We have now laid a full analysis of this important section of Dr. Hennen's publication before our brethren, which will enable them to judge for themselves respecting the principles and practices therein brought forward.

We have but few remarks of our own to make on this momentous question. We conceive that the *possibility* of curing both primary and secondary syphilis is now beyond the shadow of doubt; and for the ascertainment of this important point we are solely indebted to the Army Medical Board and Officers, who alone could have made the trial on a scale, and with a precision that must carry conviction to the most sceptical mind. For this service to Medical Science posterity will long record the names of her zealous cultivators, in the British army; nor will their liberal cotemporaries withhold the meed of their well-earned approbation.

In respect to the *elegibility* of treating syphilis without mercury, we think that reasonable doubts may be entertained. While the knowledge disclosed in the foregoing documents imperiously indicates the propriety of a far greater restriction in the use of mercury, for the cure of syphilis, than we have hitherto thought proper, so there is nothing in the said documents that fairly goes to contra-indicate a moderate administration of the old remedy, where scrofula, idiosyncrasy of constitution, or other reason do not stand in the way, and induce us to trust to the powers of Nature, assisted by rest, abstinence, and gentle evacuations.

To what we have said of Dr. Hennen's work in general, at the opening of this article, we can add nothing more than our full conviction that it is one of the most practical, useful, and interesting publications which have fallen under cognizance for many years past.

MEDICAL AND PHILOSOPHICAL INTELLIGENCE.

Case of Hydrocephalus, which necessitated Puncture of the Cranium, in order to admit of the Delivery of the Child.—By Dr. Georget.—In this instance, which occurred in a woman, aged thirty, who had previously borne four children without accident, the abdomen of the fœtus was supposed by the midwife to present. But Dr. Georget, on examination, distinguished several of the cranial bones widely separated, and found that the inter-parietal space constituted the presenting point. The excessive volume of the cranium rendering delivery wholly impracticable, it was at length punctured with a large trochar; and four pints of a clear yellowish fluid evacuated. Extraction of the feet was subsequently accomplished without any unfavourable occurrence; and the woman did well. A very accurate description of the external appearance of the fœtus and admeasurement of the cranium are subjoined. The following were the results of its anatomical inspection:—The cavity, empty in its four superior fifths, contained inferiorly the encephalon. The dura mater was intimately connected both with the bones and the intervening membrane. At first sight, it seemed that the serum had been furnished by the exterior arachnoid of the brain; but, after having detached the organ, an entrance was readily made by its superior part into a large cavity, collapsed by evacuation of the fluid, and formed by an union of the three anterior ventricles. Its interior surface was smooth, without rupture, erosion, or external communication. Its superior and posterior parietes were formed by a soft delicate membrane, evidently resulting, in the middle and anteriorly, from distention of the corpus callosum; and laterally and posteriorly, from unfolding of the corresponding cerebral convolutions. The falx cerebri no longer existed. The septum lucidum and fornix were sound; the first directed anteriorly; the second upwards, toward the corpus callosum: so that the communication between the different ventricles was established by the natural openings. The inferior paries of the cavity exhibited, slightly flattened and anteriorly separated, but otherwise unaltered, the corpora striata and optic thalami. A large vein, proceeding from the plexus, passed over the thalamus, and sent off diverging branches in all directions. The inferior parts of the brain, cerebral nerves, cerebellum, and spinal marrow, were

sound. The encephalon was *supposed* neither to have increased nor diminished in weight. The author, in his "*Reflections*," shows himself to be decidedly favourable to the physiological doctrines of Gall and Spurzheim. Monstrous, diseased, or malformed fœtuses are, he lastly observes, in general, (as is the case in the present instance,) of the female sex. Is it, he inquires, that this sex possesses less energy of organization than the male? or that the generative power is stronger and more perfect for the latter than the former?

[London Med. Repository for Sept. 1820.

Case of Hernia of the Stomach through the Diaphragm.—By Dr. Lerminier.—A man, aged fifty-two, who, while serving, ten years before, in the army, had sustained a slight lance wound on the thorax, and subsequently fallen from a very high scaffold, complained of languor, indigestion, vomiting, and thoracic pains. On his admission into la Charité, March 8, last, he presented the following symptoms:—Severe pain in the left breast, aggravated by pressure and motion; dyspnœa; infrequent cough, without expectoration; cheeks flushed; tongue whitish and moist; thirst urgent; pulse small; constipation. Left side sounding well, although very painful on percussion. The disease was regarded as simple pleuritis. Blood-letting, mucilages, emollient injections. 9th, no better. Epigastric region painless. Blood without trace of inflammatory buff. Blisters to the legs; purgative injections. 10th. Symptoms aggravated. Blackish blood in the fluid vomited. Death. *Dissection*, forty-eight hours afterwards.—Countenance yet wearing expression of pain. Left thoracic cavity filled with an elastic, blackish, elliptic mass—the stomach and part of the great omentum. The œsophagus, having regularly traversed the diaphragm, turned horizontally to the left above the transverse colon; and, after a course of about two inches, repassed the diaphragm by an accidental orifice, and proceeded in an upward direction with the stomach, the four superior fifths of which were contained in the thorax. The remaining portion of the organ was situated anteriorly to the omentum, and a little to the left of the œsophagus. The stomach, distended by gas, was almost vertically in the thorax, and reached to the level of the second rib. Its two orifices were considerably drawn together, and its curvatures consequently augmented. The thickened membranes shewed the vestiges of vehement inflammation. The internal membrane, especially, was in a state of sanguineous congestion, and rendered four lines thick by the blackish fluid which it contained. The organ in the vicinity of the pylorus tore on the slightest touch; when an extrication of fetid gas and the es-

cape of a bloody fluid ensued. The accidental aperture of the diaphragm, irregularly rounded, with soft, thick, and organized borders, and about fourteen lines in diameter, was distant two inches from the œsophageal orifice, and existed in the aponeurotic portion of the muscle, to the left of the tendinous centre. The heart was driven on the mesial line of the thorax; the left lung greatly compressed, but sound; the right of its ordinary volume. Large intestine filled with indurated fæces. The case is terminated by some reflections, altogether unimportant, and by a reference to analogous facts. In one man, who, about a year since, was received into l'Hôpital St. Louis, and appeared to have an hernia of the colon or omentum, through the diaphragm, there formed, under certain circumstances, a small tumour at the lower part of the thorax, which invariably receded on pressure.

London Medical Repository for September 1820.

Change of Voice by Hydrogen.—Mr. Cooper has ascertained that if hydrogen gas be breathed for a few moments, it has the curious effect of changing the voice. The effect is observed on the person speaking immediately after leaving the vessel of hydrogen, but it soon goes off. No instance has yet occurred in which this effect on the voice has not been produced by the hydrogen.

Jour. of Sciences and the Arts, for April 1820.

Acetate of Alumine.—M. Colin has observed that, if white clay be digested in the pyrolignious acid, before its purification by combination with a base, that it dissolves and diminishes the colour of the acid very much. This solution may be made perfectly colourless by animal charcoal, and is so highly charged with alumine, that it becomes a magma, on the addition of ammonia. The clay had been previously washed with weak muriatic acid. This preparation would probably be of use in dyeing and the arts.

Jour. of Sciences and the Arts, for April 1820.

Preservation of Chrystals.—It is sometimes an object to preserve good crystals of salts, especially with those who are attentive to the study of crystallography. In attaining this end much assistance may be derived from the use of sweet oil. Many crystals, which change and become dull by exposure to air, as alum, sulphate of iron, prussiate of potash, &c.; if slightly oiled, do not then alter in a long time, and many efflorescent substances are prevented from changing by the same means. Even crystals of Glauber's salt will lie exposed to the air for weeks together without efflorescing, if well oiled. The best method is to soak the chrystals in oil for a few hours, and then to wipe them, and put them up in bottles.

Jour. of Sciences and the Arts, for April 1820.

Test for Olive Oil.—If the pernitrate of mercury, made by dissolving 6 parts of mercury in 7. 5 parts of nitric acid, of sp. gr. 1.36., at common temperatures, be mixed with olive oil, in the course of a few hours the mixture, if kept cold, becomes solid, but, if mixed with the oil of grains, it does not solidify. M. Poutet proposes, therefore, this substance as a test of the purity or adulteration of olive oil; for the resulting mixture, after standing 12 hours, is more or less pure. The nature of the white, hard, and opaque mixture, formed by olive oil, and the nitrate of mercury, has not been examined.

Jour. of Sciences and the Arts, for April 1820.

Purification of Water.—The waters of the Mississippi are very turbid, and yet are considered as very healthy. The following simple method of purifying it, is adopted at times. A handful of *Indian meal* is sprinkled on the surface of a pailful of the water, which precipitates the mud to the bottom, and the superincumbent water is left in a tolerable state of purity.—*Schoolcroft*, p. 234.

Burning Spring.—" A phenomenon which has for several years excited the attention of travellers, under the name of a burning spring, exists in one of the principal forks of Lecking river, Kentucky. It is situated about three-fourths of a mile from the banks of the river, and about eighty miles above its junction with the Ohio, opposite Cincinnati. A spring here breaks out at the foot of a hill, forming a basin of water about six feet in diameter and two feet deep, at the bottom of which issues a stream of gas, which in volume and force is about equal to the blast forced from a common smith's bellows; but there is no cessation of its force, which is such as to create a violent ebullition in the water. Being heavier than common atmospheric air, the gas on passing up through the water constantly occupies the surface which is still the lower part of an indenture in the earth at that place. On presenting a taper, this gas instantly takes fire, and burns with great brilliancy. There is no absorption of it by the water, which possesses the purity of common spring water, neither is any offensive odour thrown off. This spring has been known to dry up entirely in the summer, when the air rushes out with increased force, accompanied by a hissing noise. There is nothing like smoke emitted."—*Schoolcroft, Lead Mines of Missouri.* p. 216.

Chemistry applied to industrious Economy.—A new method of killing animals, without causing them pain, has been adopted in London: they are made to expire by means of nitrogen gas. By this means the meat is rendered much more fresh, of a more agreeable taste, and may be preserved for a greater length of time.

A great number of the butchers of London already employed this process.—*Révue Encyclopédique*, tom. v. p. 185.

On the cold which occurs at Sun-rise.

[From the Journal of Science and the Arts.]

Oxford 10 *April*, 1820.

Sir—I observe in your last number, an allusion to the cold usually experienced in *India*, about the time of sun-rise. As this phenomenon, or something very nearly resembling it, takes place in this country also, and, as far as I have been able to ascertain, in all others, it has often been a matter of surprise to me that its causes should have been little, if at all, investigated. The Meteorological Diary which appears in your Journal, and all that I have ever seen, state the height of the thermometer at a certain fixed *hour*, without any regard to the situation of the sun: now it appears to me that an accurate account of the thermometer at a certain *period of the day*, (viz. the morning dawn,) and a comparison of its indications then and at noon, or some fixed hour, or at one hour before and one after, would tend to throw some light on the causes of the phenomenon in question. It is one to which I have paid considerable attention for a good many years, and have never been able to obtain a satisfactory solution. It is very striking, and has been noticed by many; but their observation of it being in general very limited, they, for the most part give an incorrect, because a partial, description of it; *e. g.* some speak of a certain fixed hour as the coldest in the twenty-four: that is true during, perhaps, about one month in the year, and no longer, *viz.* when that hour happens to coincide with the *day-break:* the case is much the same with those who fix upon half an hour before sun-rise; which may or may not coincide with the point in question.

The phenomenon, according to the best observations I have been able to make, and which I think will be confirmed by the regular inspection of a thermometer, is this: at the first dawning of morning twilight; or within twenty minutes at the utmost, of that point, a *sudden* diminution of temperature takes place, by no means necessarily preceded by any gradual diminution: the degree of this is very various, but frequently so considerable as to make the difference between what would generally be called very mild weather, and a pretty sharp frost. I think I have on some occasions experienced in little more than twenty minutes, a change which could hardly be less than 20°. The hoar-frosts of spring and autumn generally come on at that time, and sometimes so suddenly as to surprise the earth-worms, (which come out only in very mild nights,) and freeze them in great numbers. The

cold will frequently continue, for an hour or two after the sun is up, to be greater than it had been in the night. In the remarkably hot summer of 1818, all the dew that fell was at that time the grass being at midnight as dry as at noon.

I shall be happy if these few hints have the effect of turning the attention of the lovers of meteorology to an interesting subject which has not hitherto been sufficiently investigated.

OXON.

The following observations, selected from an account given by Dr. HAMEL, physician to the Emperor of Russia, of his descent in the sea in a diving-bell, seem to be worthy of the attention of the medical practitioner. When he had arrived at about four or five feet below the surface of the water, he began to feel pain in his ears, which became more and more severe as he descended. He began to fear that it would become quite intolerable, and made some efforts to introduce air into the Eustachian tubes, to counterbalance the inordinate pressure of that externally against the membrane of the tympanum. It was a long time before he could succeed in this, and then only with the right ear: on the air suddenly entering in this, the pain instantly ceased; but it became more and more distressing in the other ear. When he was at the depth of fifteen or sixteen feet, it seemed as if a stick were forcibly thrust into this ear. At length he made the air pass also on this side, which it did with a remarkable explosion, and the pain suddenly ceased. Not the least inconvenience was felt in respiration, even at a much greater depth; though the pressure of the atmosphere must have very considerably increased. On rising, he experienced again pain in his ears, resulting from the dilatation of the air in their interior cavities; but its escape was much easier than its entry. He felt, at about each foot of distance, as it were a bubble of air escape from the ear into the mouth, and each time this took place the uneasiness lessened. As the orifice of the Eustachian tube is closed in the manner of a flattened tunnel towards the mouth, which acts like a valve, it is very difficult to make the air pass from the ear into the mouth under the ordinary atmospherical pressure; but, in the diving-bell under water, the action of deglutition alone is sufficient: it seems as if the muscles of the cheeks during this action opened the orifice of the tube, and that the condensed air then forced the passage. In making this experiment, it is necessary to close the nostrils, and to make then a strong suction with the mouth closed; the air then comes from the internal cavity of the ear into the mouth, and a slight degree of pain is felt; which ceases on swallowing the saliva; because the air then re-enters the Eustachian tube, and the

equilibrium is again established. From these circumstances, Dr. Hamel thinks that the diving-bell might prove a remedy in cases of deafness from obstruction of the Eustachian tube. In the conversation he had with the workmen who ordinarily went down in it, he found that they experienced similar sensations in their ears; and one of them said that, when the pain had become very violent, he sometimes heard a noise like the sound of a pistol-shot, and then it instantly ceased.

Lady Hardy, and some other persons, who went down in the bell at Plymouth, stated that they experienced similar phenomena.—*Lond. Med. & Physical Journal for September*, 1820.

Dr. Perret has communicated to the Physical Society of Carcassonne, a series of observations in proof of the efficacy of the plantain-root in intermittent fevers. It has long been employed in such cases by the German physicians. As it is an indigenous plant in England, it is extremely desirable that it should be ascertained whether or not the virtues imputed to it are well-founded; especially since Humboldt found, in his last voyage in America, that the cinchona lancifoliata was becoming exhausted in the forests about Peru.—(*Ibid.*)

Antidote for Vegetable Poisons.

M. Drapiez has ascertained, by numerous experiments, that the fruit of the *fewillea cordifolia* is a powerful antidote against vegetable poisons. This opinion has been long maintained by naturalists, but I am not aware that it has ever before been verified by experiments made on purpose in any part of Europe. M. Drapiez poisoned dogs with the rhus toxicodendron, hemlock, and nux vomica. All those that were left to the effects of the poison, died; but those to whom the fruit of the fewillea cordifolia was administered, recovered completely, after a short illness. To see whether this antidote would act in the same way, when applied externally to wounds into which vegetable poisons had been introduced, he took two arrows which had been dipped in the juice of manchenille, and slightly wounded with them two young cats. To one of these he applied a poultice, composed of the fruit of the fewillea cordifolia, while the other was left without any application. The former suffered no other inconvenience except from the wound, which speedily healed; while the other in a short time fell into convulsions and died.

It would appear from these experiments, that the opinion entertained of the virtues of this fruit in the countries where it is

produced, is well founded. It would deserve in consequence to be introduced into our Pharmacopœias as an important medicine; but it is necessary to know that it loses its virtues, if kept longer than two years after it has been gathered.—(*Ibid.*)

A very interesting case of laceration of the subclavian artery by a shot, in which the hemorrhage was permanently restrained by compression, has been published by Dr. Bedeschi (in the *Annali Universali di Medicina*, Feb. 1820.) A man, twenty-seven years of age, received a shot on the middle of the right scapula, which traversed the chest so as to fracture the clavicle in the middle, and lacerate the subclavian artery and vein, and the adjacent nerves; judging by the direction of the wound, and by the great loss of arterial blood which the patient had experienced. The right arm was cold, and devoid of sense and the power of motion. A compress was applied over the artery as it passes from between the scaleni muscles, and graduated compresses and a bandage applied over this. Warm fomentations were applied to the arm. Although three days elapsed without any serious consequences, some medical men advised the amputation of the arm, or the application of a ligature to the subclavian artery, to prevent more certainly a destructive hemorrhage on the separation of the eschar. But Dr. Bedeschi declined resorting to these measures, relying, 1st. on the suspension of the hemorrhage by the eschar, and the clot of coagulable lymph in the vessel; 2d. on the sufficient means presented for the compression of the artery at its passage from the scaleni on the first rib by the sternal portion of the clavicle, which the fracture had rendered moveable; 3d. because this difficult and uncertain operation might be retarded; and, lastly, because fatal hemorrhages have not often been consequent on gun-shot wounds, and many severe wounds of arteries have been cured by compression. No hemorrhage troubled the course of the cure; a little emaciation of the arm, and impossibility of moving it, were the only evil consequences. The pulsation of the subclavian artery was afterwards found to be very strong for half an inch beyond the scaleni, but could hardly be felt in the axilla: it began to be perceptible again about the middle of the arm, and was very strong at the wrist, though the artery was a little contracted. Moderate exercise of the limb, and some other ordinary measures, restored its strength; so that the patient had recovered the use of it after the lapse of twenty-eight months from the accident.—(*Ibid.*)

METEOROLOGICAL OBSERVATIONS.

State of the Weather at Philadelphia, during the last six months of 1820.

JULY.

Thermometer—Lowest at 8 A. M. 72, 24th day of the month.
Highest at 3 P. M. 93, 1st day.
Mean - - 81.

Winds chiefly southerly—weather generally clear with occasional heavy showers—several cases of malignant fever towards the close of the month in the neighbourhood of Race street wharf—some fatal cases of scarlatina—Bilious remittent continues amongst the Blacks with unabated violence.

AUGUST.

Thermometer—Lowest at 8 A. M. 69, 28th day of the month.
Highest at 3 P. M. 93½, 12th day.
Mean - - 77½.

Winds, Southerly and Easterly—heavy showers, with intermediate clear and hot weather—Crops of winter grain good—Peaches, apples, and melons abundant and good—Cholera Infantum prevalent—Malignant fever subsided in the neighbourhood of Race street wharf, and reappeared towards the latter end of the month near Walnut street wharf—is unusually fatal.

SEPTEMBER.

Thermometer—Lowest at 8 A. M. 50, 21st day of the month.
Highest at 3 P. M. 84, 1st day.
Mean - - 68½.

S. Westerly and N. Easterly winds prevail, with clear warm weather—Malignant fever continues, yet very few cases have occurred which could not be satisfactorily traced to the small infected districts—It is epidemic and unusually mortal in Savannah, New Orleans, Charleston and the Havanna. Bilious remittent amongst the Blacks nearly subsided.

OCTOBER.

Thermometer—Lowest at 8 A. M. 38, 30th day of the month.
Highest at 3 P. M. 73, 2nd day.
Mean - - 55.

Winds Northerly—frequent heavy rains—Malignant fever subsided as the weather became cold—Scarlatina continues—in general mild.

NOVEMBER.

Thermometer—Lowest at 8 A. M. 27, 14th day of the month.
Highest at 3 P. M. 58, 1st day.
Mean - - 43.

Winds Northerly and Westerly—light snow on the 11th.

DECEMBER.

Thermometer—Lowest at 8 A. M. 20, 1st day of the month.
Highest at 3 P. M. 44, 6th and 8th day.
Mean - - 33.

Winds Westerly—Weather variable—Many severe and some fatal cases of Scarlatina, although the disease is not very prevalent.

RAIN GUAGE.

Account of the quantity of Rain and Snow that fell in Germantown, in 1820.

	RAIN.	SNOW.
January,	2 5	12 0
February,	3 2	12 0
March,	5 5	1 0
April,	0 80	6 0
May,	6 94	
June,	2 15	
July,	5 20	
August,	2 60	
September,	1 92	
October,	8 89	
November,	2 90	4 0
December,	3 8	5 0
Inches,	44 60	Inches, 40 0

[*Am. Da. Adver.*

DISPENSARIES.

It appears, from the statements published, that there have been attended, by the Dispensary physicians, since last year, four thousand six hundred and seventeen patients.—

Philadelphia Dispensary—

From December 1st. 1819, to December 1st. 1820—	-	3,223
Of these the number cured is	2897	
Relieved	67	
Dead	66	
Irregular or uncertain	90	
Removed	33	
Remaining under care	70	
		-3,223

Southern Dispensary.

From December 1st. 1819, to December 1st. 1820.—	-	1,394
Of these the number cured is - - -	1,217	
Relieved - - - - - -	66	
Dead - - - - - - -	45	
Irregular or uncertain - - -	17	
Removed - - - - -	23	
Remaining under care - - -	26	
		1,394

Northern Dispensary.

No publication yet made by them.

VACCINATION.

The City Clerk reports, that during the year 1820, thirteen hundred and fifty-one persons, have been successfully vaccinated, in the City of Philadelphia, by the physician appointed by the Select and Common Councils.

By the report of the Board of Commissioners of Southwark, it appears that their physician has successfully vaccinated eight hundred and forty one persons, from April 3, 1820, to January 8, 1821.

The Board of Commissioners of the Northern Liberties have not yet published the numbers vaccinated by their Physician.

AMERICAN PHILOSOPHICAL SOCIETY.

At an Election held this day, at the Hall of the American Philosophical Society, the following persons were elected officers:—

President—Robert Patterson.

Vice President—William Tilghman, Peter S. Duponceau, Zaccheus Collins.

Secretaries—Robert M. Patterson, Thomas T. Hewson, Robert Walsh, George Ord.

Counsellors.

For one year—Wm. Rawle, Horace Binney, John Sergeant, John Quincy Adams.

For two years—James Gibson, Nathaniel Chapman, Robert Hare, Wm. Hembel, jr.

For three years—Thomas Jefferson, William M'Clure, William Meredith, Nicholas Collin,

Curators—Joseph Cloud, Thomas Say, William E. Horner.

Treasurer—John Vaughan.

Philadelphia, Jan. 5, 1821

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Inches,	44 60	Inches, 40 0

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PHILADELPHIA DISPENSARY.

January, 1, 1821.

The annual meeting of the Contributors was held this day, when the following persons were duly elected Managers for the present year:

William White, Robert Blackwell, Henry Helmuth, Lawrence Seckel, Robert Smith, Godfrey Haga, Elliston Perot, Joseph Crukshank, Roberts Vaux, Joseph Parrish, Hartman Kuhn, Samuel P. Griffitts.

At a meeting of the Managers, January 3d. the following named officers of the Institution, were appointed:

Attending Phisicians and Surgeons—Drs. Joseph G. Nancrede, George B. Wood, Richard Harlan, William Price, Goveyneer Emerson, Hugh L. Hodge.

Consulting Physicians and Surgeons.—Drs. Thomas Parke, Philip S. Physick, Thomas C. James, Thomas T. Hewson.

Treasurer—Joseph M. Paul.

Apothecary—George G. Tresse.

NATIONAL PHARMACOPŒIA.

This long desired work is now printing at Boston, under the care of a committee of the General Convention.

List of Late American Republications.

Thomas Dobson and Son, have commenced the publication of the Modern Medical Classics; selected and revised by Drs. Physick and Chapman.—The first work of the series is Johnson's celebrated work on the Diseases of Tropical and Tropicoid Climates—which is just finished in two volumes, 12mo. price in boards, $2 or neatly bound, $2 50, each of the works composing the series, will be for sale separate.

Parson's Sailor's Physician, bds. 8vo. $1 75.

Frost on the Yellow Fever of Havanna, stitched, 8vo. 50.

New York Hospital Reports, pt. 2. bd. 8vo. 1 50.

Facts and Observations on Liver Complaints, and Bilious Disorders in General—By John Faithhorn, M. D. 8vo. 1 dollar 50 cents.

Baillies' Morbid Anatomy, 8vo. $ 2 50.

London Dissector—First American from the fifth London Edition.

Willich's Domestic Encyclopædia, improved. By Thomas Cooper, M. D. 3 vols. 8vo. $10 50, in boards. $ 12 00 bound.

Proposed American Republications.

Armstrong on Scarlatina, &c. &c. to match Johnson on Tropical Diseases, in 12mo. By Thomas Dobson and Son.

Saunders on the Eye, with Coloured Plates.

Saunders on the Ear, with coloured Plates.

Brodie on Diseases of the Joints, Coloured Plates. By Benj. Warner.

List of recent European Publications.

Medicine, Anatomy, and Surgery.

Medical Transactions, published by the College of Physicians in London, with coloured plates, Vol. viii. 12*s.* boards.

A Treatise on the Inflammation of the Mucous Membrane of the Lungs. By Charles Hastings, 8 vo. 10*s.* 6*d.*

An Address to persons afflicted with Deafness. By W. Wright. 4*s.*

A Synopsis of the various kinds of difficult Parturition, with Practical Remarks on the management of Labours. By S. Merriman. 12*s.* boards.

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